

CATALOG No. 50  
SECOND EDITION

# NIAGARA MACHINE AND TOOL WORKS

TOOLS AND MACHINES  
FOR SHEET METALS

TINSMITHS' AND ROOFERS' TOOLS  
PRESSES AND PUNCHES  
SQUARING AND ROTARY SHEARS, ETC.



BUFFALO, NEW YORK

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We have separate Catalogs of Presses and Power Shears, which will be cheerfully mailed to those in need of such machines.

Besides the Machines shown in this Catalog, we make:

POWER PUNCHES—Single and Multiple  
PRESSES—Power, Foot, Screw and Drop  
CAN MAKING MACHINERY  
DIES AND SPECIAL MACHINERY  
Etc., Etc.

## CATALOG NO. 50

*Second Edition*

### TOOLS AND MACHINES FOR TINSMITHS AND SHEET METAL WORKERS



# NIAGARA MACHINE & TOOL WORKS

*MANUFACTURERS OF*

## MACHINERY FOR SHEET METALS

ESTABLISHED 1880

PRESSES--SHEARING MACHINES

PUNCHES--FORMING ROLLS

TINSMITHS' TOOLS, ETC.

NIAGARA

TRADE

MARK



Northland Avenue  
Near Fillmore

**BUFFALO, N. Y.**  
U. S. A.

Cable Address "Stamping"  
CODES  
Western Union, Lieber's  
A. B. C.

## TERMS

**INQUIRIES.** Prompt attention is given to all inquiries. The requirements should be fully and clearly explained and illustrated, preferably by samples or correct drawings.

**ILLUSTRATIONS** given in this catalog are fair representations of the various machines and tools, but are not binding in detail. When a machine is made in more than one size, it occasionally happens that the different sizes vary in form and detail, or modifications may be made before revised catalogs are issued.

**WEIGHTS** are given approximately, to enable intending buyers to estimate the freight charges.

**CAPACITIES.** In giving details of tools and machines, or their capacities, we endeavor to indicate the range of work to which we consider them adapted. Should it be proven that tools and machines furnished by us do not come up to our representations, buyers are at liberty to return them to us by freight within two weeks after arrival, and we will cancel the sale, without assuming further obligations.

**SPECIAL MACHINES.** Our standard machines can be modified more or less, and we have many patterns beside those illustrated, which can be used to meet requirements out of the ordinary.

**ORDERS** are filled with all possible despatch, but under no circumstances will we guarantee the time of delivery. When date of delivery is mentioned, we will endeavor to complete the work as near the time as possible, but cannot assume the responsibility for any loss or inconvenience caused by overdue delivery or our inability to produce the work undertaken. Orders cannot be cancelled without our consent after the work has been commenced. Orders placed through our agents are subject to the approval of our Main Office.

**DELIVERY.** We deliver to railroad or express company in this city in good order and condition, and are not responsible for delays or damages occurring in transportation. Boxing or crating will be charged for extra, at cost, unless arranged otherwise.

**TERMS OF PAYMENT.** Unless otherwise agreed, terms on approved credit are net cash, 30 days from date of invoice, subject to sight draft with exchange on New York.

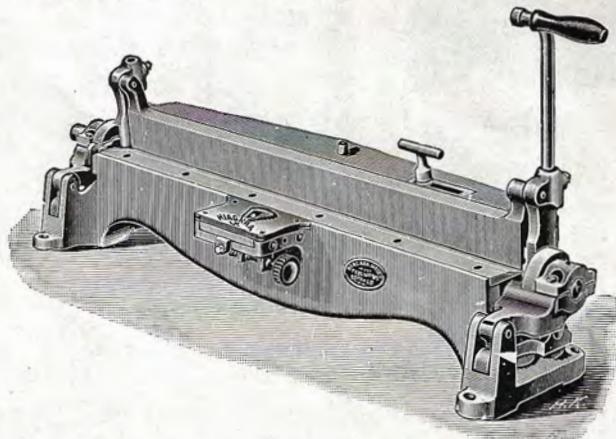
**CLAIMS** must be brought to our notice within a reasonable time. We do not assume any obligations for unauthorized alterations on tools, machines and parts furnished by us.

**PRICES** are subject to change without notice. Quotations are for immediate acceptance. Clerical errors in our proposals are subject to correction.

NIAGARA MACHINE & TOOL WORKS.

We issue separate catalogs of  
PRESSES and SHEARING MACHINES  
and will send them on application to intending purchasers.

## Keystone Adjustable Bar Folder—Patented



It bends the edges of light sheet metal at various angles to form locks, square joints, etc., and forms rounded edges ready for inserting a wire. The edge of the material is clamped while the bending takes place, and a fold of uniform width the entire length is obtained.

**GAUGE**, which regulates the width of the fold, is adjusted by turning the knob on the side of the extension. The width to which the gauge is adjusted is indicated on a scale in fractions of inches, to avoid measuring or trying.

**ADJUSTABLE STOP** is provided to limit the motion of the folding bar for any desired angle, also square and bevel stops.

**ROUNDED EDGES.** The pivots of the wing on the folding bar can be adjusted for rounded edges. When so adjusted the top surface of the wing remains flush with the gripping jaw until the operator begins to swing the folding bar, which is of advantage when placing the work in position.

**CAPACITY.** Niagara Bar Folders are suitable for as heavy work as other machines of this type, but it is not advisable to overstrain them. They will answer for No. 24 iron and lighter, and 21 inch and longer Folders will do for folding No. 22 iron not less than  $\frac{3}{16}$  inch wide. We adjust for IC and IX tin; for thicker material proper adjustment must be made by means of the screws under the shoes.

**INTERCHANGEABLE PARTS** are used for our bar folders. Orders for duplicate parts should state factory number of machine for which they are intended.

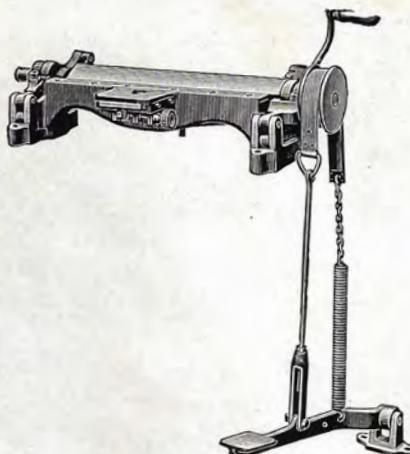
**COUNTERBALANCE ATTACHMENT** for folding bar can be applied to 17 to 36 inch Bar Folders, at extra charge, and it is included in the prices of 42 and 60 inch Folders.

**FOOT TREADLE ATTACHMENT** to actuate the folding bar can be used only on 17 and 21 inch Bar Folders.

KEYSTONE BAR FOLDER	Code Word	Shipping Weight	Price
17 inches long	.....	Rabais	\$25.00
21 inches long	.....	Rabalde	30.00
30 inches long	for locks $\frac{3}{32}$ to 1 inch	Rabalva	40.00
36 inches long	.....	Rabato	60.00
42 inches long for locks $\frac{1}{8}$ to $1\frac{5}{8}$ inch.	.....	Rabbi	90.00
60 inches long for locks $\frac{1}{8}$ to 2 inch.	.....	Races	200.00
Counterbalance Attachment for 17 to 36 inch Bar Folders, extra	.....		4.00
Foot Treadle and Spring Attachment for 17 and 21 inch Folders, extra	.....		12.00



Bar Folder with Square Pipe Attachment



Excelsior Bar Folder with Foot Treadle Attachment

### Keystone Bar Folder with Square Pipe Attachment

The attachment is used in forming square and oblong can bodies, pipe, etc., not less than 3 x 6 inches, with slightly rounded corners. To use the Folder for regular work, swing the attachment downward after disconnecting the treadle rods.

BAR FOLDER WITH SQUARE PIPE ATTACHMENT	Code Word	Shipping Weight	Price
30 inches long.....	Racimo	320 lbs.	\$50.00
36 inches long.....	Racimud	370 lbs.	75.00

### Excelsior Bar Folder

This Folder is the same as the "Keystone," except that it has a quick adjusting device for single and double thickness of material, and attachment for counterbalancing the folding bar.

Excelsior Folder has been found very useful in lithographing and printing establishments for mounting show cards, hangers, etc.

QUICK ADJUSTING DEVICE is used to increase the space between the jaw and folding blade to make room for the first fold when compressed with the edge of the hanger inserted.

FOOT TREADLE ATTACHMENT to actuate the folding bar can be applied only to 17 and 21 inch Folders.

EXCELSIOR BAR FOLDER	Code Word	Shipping Weight	Price
17 inches long }	Raclon	125 lbs.	\$31.00
21 inches long }	Racoler	145 lbs.	36.00
30 inches long }	Racoma	250 lbs.	46.00
36 inches long }	Raconto	290 lbs.	66.00
42 inches long for locks from $\frac{1}{8}$ to $1\frac{5}{8}$ inch....	Radarm	530 lbs.	96.00
Foot Treadle Attachment to 17 and 21 inch Excelsior Folders, extra.....			8.00

SPECIAL BAR FOLDERS can be furnished, at proper charge—

For extra wide edges, which increases the narrowest limit.

For bevel locks, wider on one end than on the other.

For extra narrow edges (on light stock only).

With gauge points of hardened tool steel, etc., etc.

Inquiries should explain the requirements in detail.

The following Sheet Iron Folders are intended for ordinary work. The edge of the material is not clamped while being turned.

### Iron Bottom Folder



GAUGE is adjustable for locks from  $\frac{3}{16}$  to  $\frac{1}{2}$  inch wide.

IRON BOTTOM FOLDER	Code Word	Shipping Weight	Price
30 inches long.....	Radbody	65 lbs.	\$ 7.00
39 inches long.....	Radgarn	85 lbs.	12.00

### Improved Sheet Iron Folder



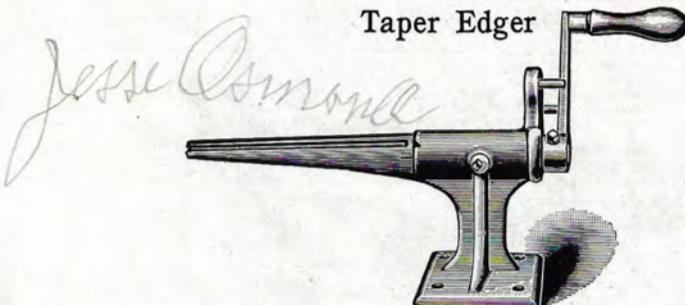
GAUGE moves parallel to the edge of the folding blade.

30 to 96 inch Folders for locks from  $\frac{3}{16}$  to  $\frac{3}{8}$  inch; 120 inch from  $\frac{1}{4}$  to 1 inch.

96 and 120 inch Folders have counterbalanced folding bar.

IMPROVED SHEET IRON FOLDER	Capacity	Code Word	Shipping Weight	Price
30 inches long.....	No. 24	Radial	80 lbs.	\$ 10.00
42 inches long.....	No. 24	Radicar	120 lbs.	18.00
60 inches long.....	No. 26	Radier	265 lbs.	25.00
72 inches long.....	No. 26	Radiola	430 lbs.	65.00
96 inches long.....	No. 26	Radreg	1050 lbs.	100.00
120 inches long.....	No. 26	Repajos	1200 lbs.	150.00

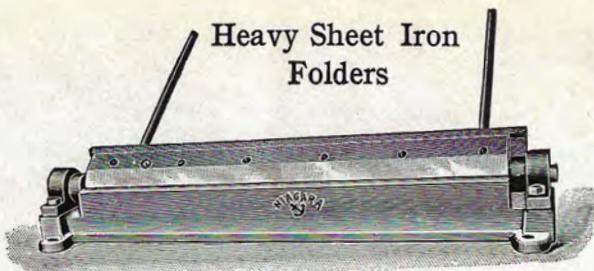
### Taper Edger



Intended for folding the edges of cylindrical and conical work of small diameter and light material not less than 2 inch diameter, if 6 inches long.

TAPER EDGER	Code Word	Weight	Price
6 inches long.....	Raigas	8 lbs.	\$8.00

## Heavy Sheet Iron Folders

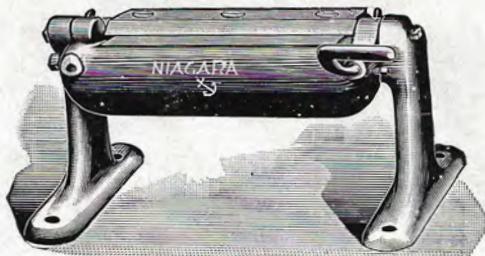


These are extra heavy machines. Gauge is adjustable within the limits mentioned below. No. 4, 72 and 96 inch, and No. 6, 48 inch, Folders have counterbalanced folding bar.

HEAVY SHEET IRON FOLDERS		For locks from	Capacity	Code Word	Shipping W't	Price
No. 4, 30 inches long . . . . .		$\frac{1}{4}$ to 1 inch	No. 20	Radules	190 lbs.	\$30.00
No. 4, 42 inches long . . . . .		$\frac{1}{4}$ to 2 inch	No. 20	Radnut	390 lbs.	50.00
No. 4, 48 inches long . . . . .		$\frac{1}{4}$ to 2 inch	No. 20	Rafael	450 lbs.	60.00
No. 4, 72 inches long . . . . .		$\frac{1}{4}$ to 2 inch	No. 20	Rafalant	950 lbs.	120.00
No. 4, 96 inches long . . . . .		$\frac{1}{4}$ to 1 inch	No. 20	Rafeld	1350 lbs.	160.00
No. 6, 30 inches long . . . . .		$\frac{1}{4}$ to 1 inch	No. 18	Raffer	225 lbs.	40.00
No. 6, 48 inches long . . . . .		$\frac{1}{4}$ to 1 inch	No. 18	Raffin	725 lbs.	80.00

These Folders can be mounted on iron legs, at extra charge.

## Body Blank Folder



For No. 26 Iron and Lighter

For folding the edges of can bodies, etc., of light material. It is easily operated and works rapidly.

Cylindrical work not less than  $2\frac{1}{2}$  inch diameter can be folded.

Gauge is adjustable from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch.

BODY BLANK FOLDER	Code Word	Net Weight	Price
6 inches long. . . . .	Radreib	15 lbs.	\$8.00
12 inches long. . . . .	Radslot	20 lbs.	12.00

## Can Top Folder



For No. 26 Iron and Lighter

The open end of these Folders makes them suitable for folding taper blanks such as oil can breasts, funnels, etc. An adjustable gauge is provided.

CAN TOP FOLDER	For locks from	Code Word	Net Weight	Price
No. 2, 10 inches long . . . . .	$\frac{3}{32}$ to $\frac{1}{4}$ inch	Rameal	25 lbs.	\$10.00
No. 3, 13 inches long . . . . .	$\frac{1}{8}$ to $\frac{3}{8}$ inch	Ramify	65 lbs.	15.00

## Square Pan Folders



Miller's



Whitney's

**MILLER'S.** Used in turning the edges of square pans made of light material ready to receive the wire. The end turning piece with handle is 7 inches long. Gauge is adjustable from  $\frac{1}{16}$  to  $\frac{3}{8}$  inches.

MILLER'S SQUARE PAN FOLDER	Code Word	Net Weight	Price
20 inches long.....	Raploch	22 lbs.	\$5.00

**WHITNEY'S** clamps square pans to facilitate turning the edges.

WHITNEY'S SQUARE PAN FOLDER	Code Word	Net Weight	Price
20 inches long.....	Rappa	10 lbs.	\$2.50
28 inches long.....	Rapport	20 lbs.	4.00

## Niagara Adjustable Pipe Folder



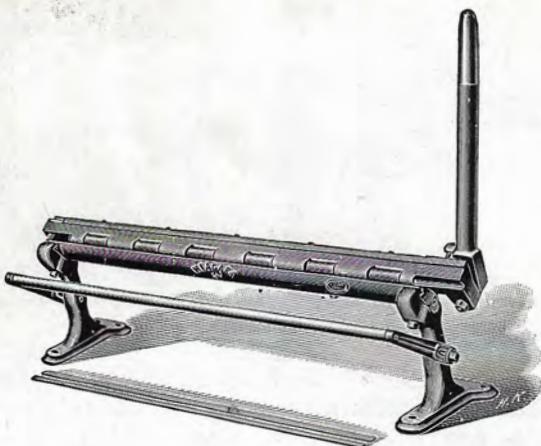
It has been found that ordinary Stove Pipe Folders cannot be relied on to fold the edges exactly uniform owing to variations in the material, which is frequently hard in some spots and soft in others. The Niagara Adjustable Pipe Folder overcomes this difficulty. Locks of uniform width the entire length are obtained, irrespective of variations in the hardness of the material.

Edges can be turned, on sheets longer than the machine, similar to the Fairchild's Folder. ADJUSTABLE GAUGE for locks from  $\frac{1}{16}$  to  $\frac{3}{8}$  inch wide.

STEEL ROD is inserted to protect and prevent wear on the edge of the lower bar.

NIAGARA ADJUSTABLE PIPE FOLDER	Capacity	Code Word	Shipping Weight	Price
30 inches long.....	No. 22	Rainulf	85 lbs.	\$14.00
42 inches long.....	No. 24	Raixa	125 lbs.	26.00

## Wright's Pipe Folder



Wright's Folder with Fairchild's Attachment

Particularly intended for folding the edges of sheets formed in cylindrical shape; also suitable for folding flat sheets.

FAIRCHILD'S ATTACHMENT is used in turning the edges of sheets of any length. The round rod is placed in the machine so that the sheet will pass over it when put in position for the folding operation. A slight bend is first made the entire length of the sheet, and the operation is repeated until the edge is turned up as far as possible, not more than at right angles; enough, however, to be readily hammered down.

Wright's Folder is suitable for locks  $\frac{3}{16}$  and  $\frac{5}{16}$  inch wide.

Fairchild's Folder is suitable for locks  $\frac{3}{16}$ ,  $\frac{5}{16}$ ,  $\frac{1}{2}$  and  $\frac{5}{8}$  inch wide.

To fold locks wider than the depth of the folding blade, use the steel strips under the blade to increase its width.

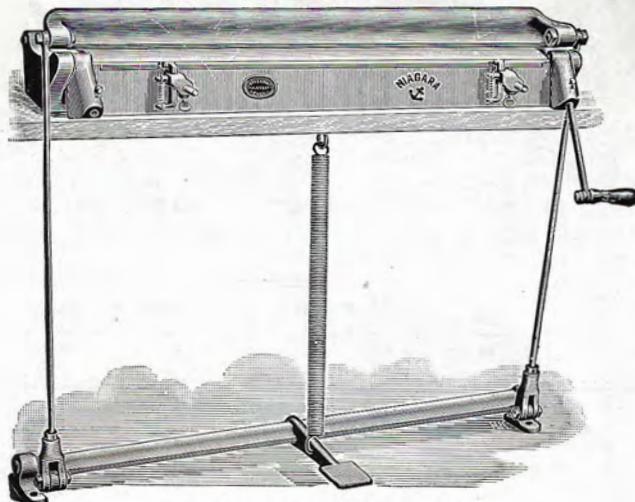
WRIGHT'S FOLDER	Capacity	Code Word	Shipping Weight	Price
30 inches long .....	No. 22	Rafeo	75 lbs.	\$12.00
42 inches long .....	No. 24	Rafle	105 lbs.	20.00
62 inches long .....	No. 24	Rakel	185 lbs.	46.00
30 inches long with Fairchild's Attachment.	No. 22	Ralhos	80 lbs.	15.00
42 inches long " " "	No. 24	Ragout	115 lbs.	24.00
62 inches long " " "	No. 24	Raido	200 lbs.	50.00

## Special Folding Machines

Besides the Folders mentioned in this Catalog, we have a large number of special patterns which can be used in meeting unusual requirements. Inquiries should explain the nature of the work in detail, giving dimensions, shape, thickness of material, etc.

**OPEN THROAT FOLDERS AND BRAKES.** There is an unobstructed space between the bed and clamping bar when the latter is in the elevated position. The sheet can be passed through between these parts and bent any distance from its ends. The sheet remains stationary during the bending operation.

### Niagara Open Throat Folder



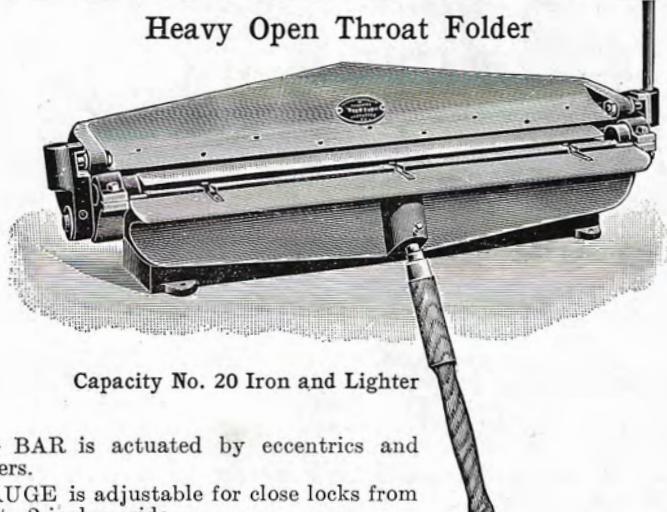
For No. 24 Iron and Lighter

CLAMPING BAR is actuated by foot treadle.

FRONT GAUGE is adjustable for close locks from  $\frac{1}{4}$  to 2 inches wide.  
Wider bends can be turned at an angle of not less than  $40^\circ$ .

NIAGARA OPEN THROAT FOLDER	Code Word	Shipping Weight	Price
36 inches long.....	Rampic	225 lbs.	\$30.00

### Heavy Open Throat Folder



Capacity No. 20 Iron and Lighter

CLAMPING BAR is actuated by eccentrics and levers.

FRONT GAUGE is adjustable for close locks from  $\frac{1}{4}$  to 2 inches wide.

Bends at an angle of not less than  $45^\circ$  can be made any distance from either end of the sheet.  
No. 2 will answer for No. 18 iron, if the edge is wider than  $\frac{1}{2}$  inch.

HEAVY OPEN THROAT FOLDER	Code Word	Shipping Weight	Price
No. 2, 24 inches long.....	Ramot	380 lbs.	\$48.00
No. 3, 36 inches long.....	Ramrod	580 lbs.	70.00
Iron Legs, extra.....	.....	110 lbs.	10.00

## Bench Square Pipe Former



CLAMPING BAR is actuated by foot treadle. It is pivoted at one end so that the operator can swing the bar sideways to facilitate removing the work.

Slots can be cut in the clamping bar to receive flanges turned previously.

THREE GAUGES, adjustable on brackets, permit of making successive bends on square pipe without marking the sheet.

BENCH SQUARE PIPE FORMER	For Pipe not less than	Capacity	Code Word	Shipping Weight	Price
36 inches long.....	3 x 3 inch	No. 24	Rampoll	235 lbs.	\$35.00
24 inches long.....	5 3/4 x 5 3/4 inch	No. 20	Rampon	520 lbs.	60.00

## Square Body and Pipe Former



For No. 26 Iron and Lighter

Intended for forming square and oblong pipe, can bodies, etc., with square or rounded corners.

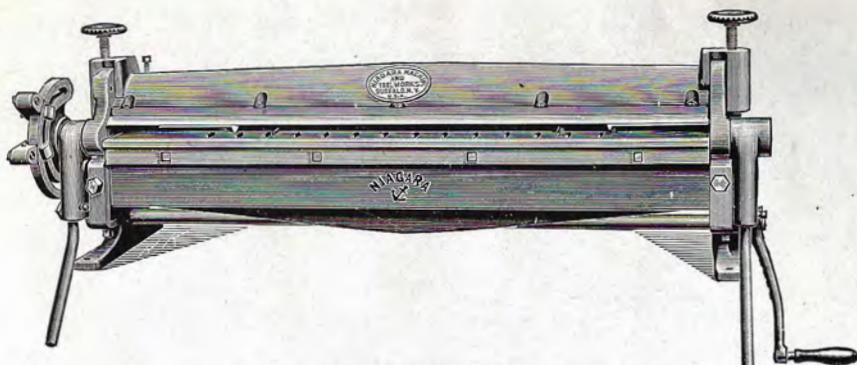
CLAMPING BAR is actuated by foot treadle. It has removable corner forming pieces, one for square and two for round corners with  $\frac{1}{8}$  and  $\frac{1}{4}$  inch radius. It is hinged on one end, so the other end can be released and swung outward to permit of removing the formed work.

Slots can be cut in the clamping bar to receive flanges turned previously.

GAUGES are furnished and extension brackets to fix the position of the sheet in making the successive bends.

SQUARE BODY AND PIPE FORMER	Square Pipe not less than	Code Word	Shipping Weight	Price
20 inches long.....	3 x 3 inch	Ransels	340 lbs.	\$40.00
30 inches long.....	3 x 3 inch	Ranular	440 lbs.	45.00
36 inches long.....	3 1/2 x 3 1/2 inch	Repace	490 lbs.	55.00
42 inches long.....	4 x 4 inch	Rapelho	550 lbs.	65.00
48 inches long.....	4 x 4 inch	Raphael	600 lbs.	75.00

## Universal Folder and Brake—No. 1



For No. 20 Iron and Lighter

Will turn sharp or rounded edges, like a Folder, and sheets can be bent any distance from both ends, as on a Brake.

**CLAMPING BAR** has a parallel motion up and down of 1 inch, and in the lowest position it grips the inserted material firmly. It can be raised and lowered by means of the two screws on top of the frame, to give up to 3 inch space between the bar and bed, to allow for the thickness of the material and for inserted forming bars.

**FOLDING BAR** is of solid steel, upper edge  $\frac{3}{8}$  inch wide. A removable reinforcing bar is provided, giving a combined width of 1 inch. The bar is adjustable up and down to permit of turning rounded edges with not more than  $\frac{1}{4}$  inch radius. For the best result it is advisable to use a special folding blade with the desired rounding.

**FOLDING BLADE**, around which the material is bent, can be readily removed to allow substituting others of different shape.

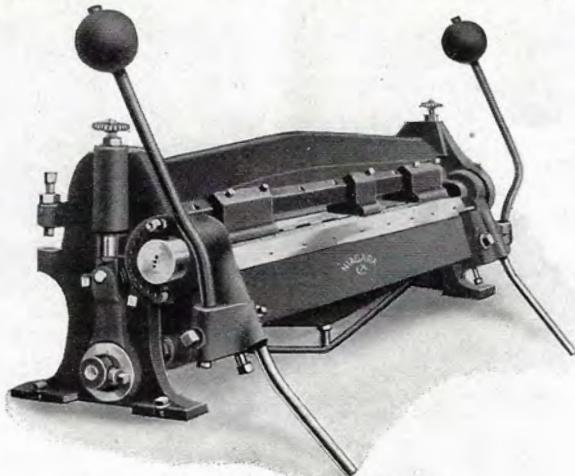
**BACK GAUGE** is adjustable from  $\frac{1}{4}$  to 10 inches, and can be taken off entirely. The back gauge rods are graduated in  $\frac{1}{16}$  inch.

**ADJUSTABLE STOPS.** The segment shaped extension at the one end of the Folder carries adjustable stops to regulate the angle of the bend. The stops can be instantly moved in and out of position.

**FRONT GAUGE** adjustable for locks from  $\frac{1}{4}$  to  $\frac{3}{4}$  inch can be attached to the folding bar, when the reinforcing bar is removed, at extra cost.

No. 1 UNIVERSAL FOLDER AND BRAKE	18 inches	42 inches	60 inches
Shipping weight .....	300 lbs.	475 lbs.	1100 lbs.
Price with one blade for sharp locks.....	\$60.00	\$70.00	\$160.00
Code word .....	Rancia	Ranches	Rancune
Adjustable front gauge (Rancido) extra .....	\$5.00	\$5.00	\$7.50
Iron Legs (Rantil) extra.....	\$8.00	\$8.00	\$15.00

## Universal Folder and Brake for Round Edges—No. 2



For No. 20 Iron and Lighter

This machine is similar in construction and possesses the same features as No. 1 Universal Folder and Brake, and in addition it is suitable for turning rounded edges of a radius up to  $\frac{5}{8}$  inch.

**FOLDING BAR** works on eccentric pivots, which can be adjusted to raise and lower the center around which the bar swings, as required for sharp or round bends.

**FORMING BAR**, made of wood or iron, is required for each rounding. Short forming bars are used for pieces on which the sides have been turned previously.

We furnish the regular blade for sharp locks. Forming bars for round edges are charged for extra, according to the requirements.

NO. 2 UNIVERSAL FOLDER AND BRAKE	Code Word	Shipping Weight	Price
36 inches long .....	Randlos	500 lbs.	\$ 85.00
52 inches long .....	Randolf	1100 lbs.	175.00
Adjustable Front Gauge to 36 inch Folder, extra .....			5.00
Adjustable Front Gauge to 52 inch Folder, extra .....			7.50

## Double Lock Folder



Capacity No. 24 Iron and Lighter

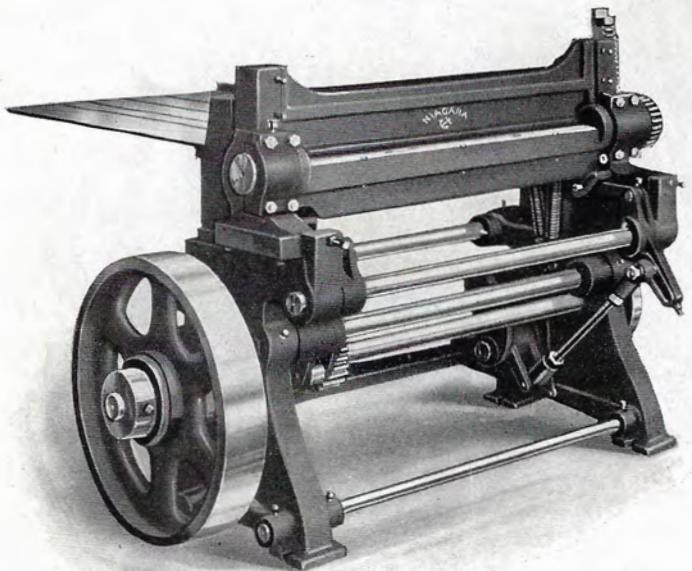
The clamping bar raises to permit of passing the sheet through from front to back. In forming a double lock the sheet is inserted from the rear and the two bends are gauged and turned successively.

**GAUGE BAR** is made in two pieces. Its front part is lowered quickly by means of a handle before turning the second lock, or the inner lock would be compressed.

**GAUGE** is adjustable for inner bend from  $\frac{1}{8}$  to  $\frac{5}{8}$  inch wide, and, unless otherwise ordered, the gauge is arranged that the second bend will be  $\frac{3}{32}$  inch wider than the first one.

NIAGARA DOUBLE LOCK FOLDER	Code Word	Shipping Weight	Price
36 inches long .....	Rifrusta	215 lbs.	\$50.00

## Power Double Lock Folder



Intended for turning a double lock on the ends of sheets up to 36 inches wide, No. 24 gauge iron and lighter.

Both bends of the double lock are turned at the same operation without altering the position of the sheet between the first and second bends.

**THE FOLDING BARS SLIDE ON WAYS.** For the first or inner bend they move outward, taking hold of the sheet where the bend is to be made, until the swinging bar has completed the first turn. Then the folding bar recedes to grip the material further back, and the swinging bar will make the second or outer bend.

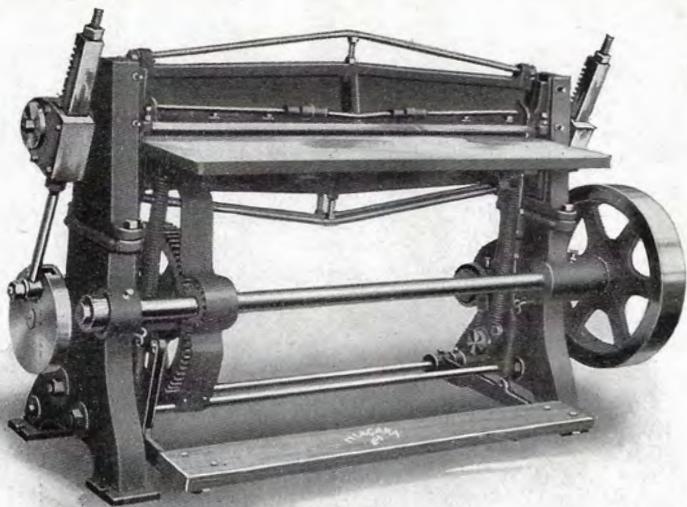
**CLUTCH.** The motion of the machine is controlled by a positive clutch.

When the operator depresses the foot treadle the upper clamping bar descends and holds the sheet firmly while both bends are being turned.

**GAUGES.** Adjustable gauges determine the proper position of the sheet. The width of the outer bend can be varied from  $\frac{3}{8}$  to  $\frac{5}{8}$  inches, and the width of the inner bend must be  $\frac{3}{32}$  inch less than that of the outer bend.

POWER DOUBLE LOCK FOLDER	Code Word	Shipping Weight	Price
36 inches long.....	Radfer	2150 lbs.	\$

## Niagara Power Folders and Brakes



### 48 Inch Power Folder and Brake, Back-Geared

The sheet is clamped between the bed and clamping bar, and remains stationary while the edge is being folded. The clamping bar raises about  $\frac{3}{4}$  inch, to permit withdrawing the folded sheet.

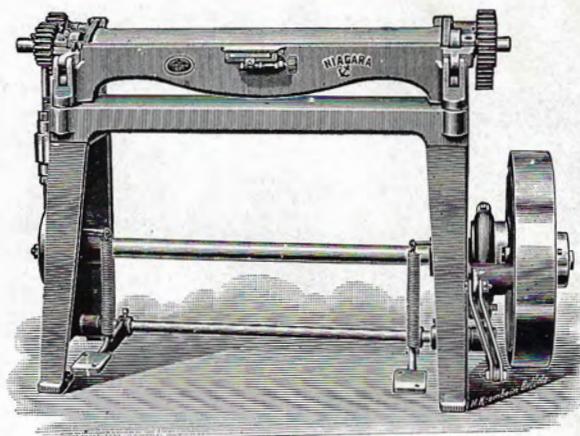
CLUTCH controls the motion of the clamping and folding bars. By depressing the foot treadle, the bars are caused to perform the required motions to produce one bend, and they will stop when back to the original position, unless the treadle is kept depressed.

ADJUSTABLE GAUGE on the folding bar for locks from  $\frac{3}{16}$  to 1 inch wide. Angle of bend can be regulated to not less than  $30^\circ$  by adjusting the stroke of the folding bar.

NIAGARA POWER FOLDERS	36 inches	48 inches	72 inches	120 inches
Capacity iron up to No. ....	22	20	22	24
Size of flywheel, inches.....	22 x 4	22 x 4	22 x 4	25 x 4
Speed of flywheel, R. P. M. ....	60	225	215	200
Ratio of gearing.....		4½:1	4½:1	5:1
Shipping weight, lbs. ....	1250	1800	2600	4200
Code word .....	Raddia	Raddon	Radel	Rankig
Price .....	\$	\$	\$	\$

SPECIAL POWER FOLDERS. These machines can be modified for special folding work, combined folding and grooving operations, rounded locks, etc., in which case extra folding blades and other modifications are required, at proper charge.

## Niagara Power Bar Folder



Capacity No. 24 Iron and Lighter

Possesses all the advantages of our Keystone Bar Folder, viz., adjustable gauge with index, adjustment for rounded locks, etc. Power drive is of decided advantage when work is to be turned out in quantities, as the operator is left with his hands free.

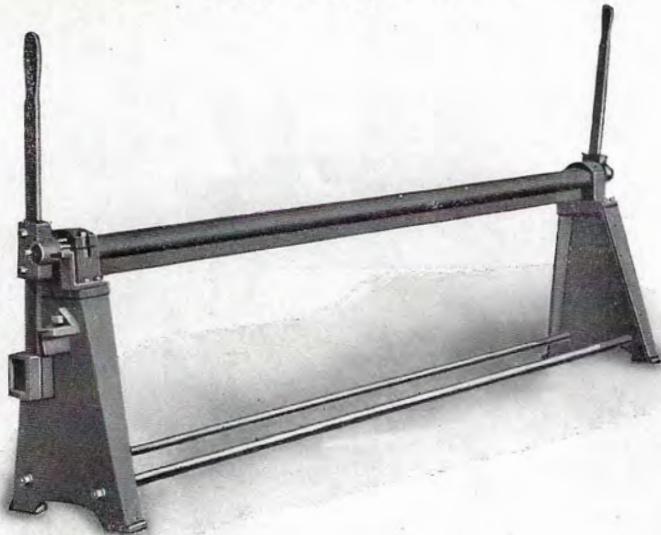
Both ends of the folding bar are actuated by means of segments and pinions from a rocking shaft oscillated by a crank disc.

**CLUTCH.** The motion is controlled by a positive clutch. By depressing the foot treadle the folding bar is caused to make one turn and it will stop on returning to the original position, unless the operator keeps the treadle depressed.

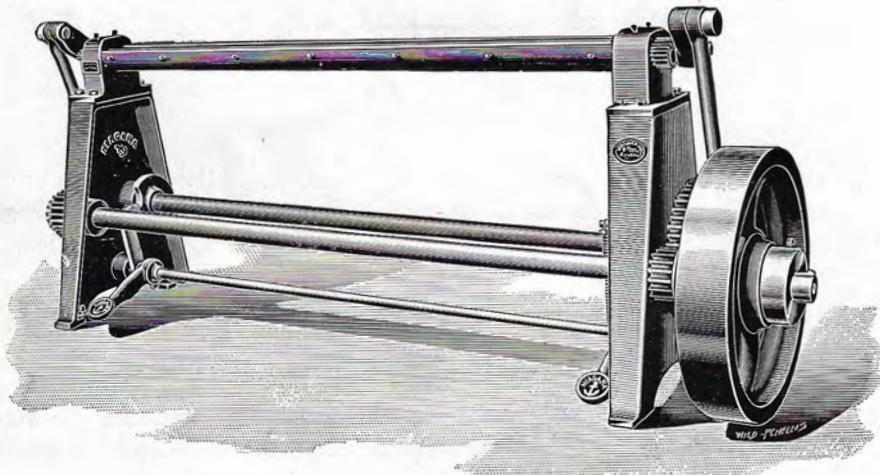
**ANGLE OF THE BEND** can be regulated by adjusting the connecting rods on the crank disc.

POWER BAR FOLDER	Code Word	Shipping Weight	Price
30 inches long for locks from $\frac{3}{32}$ to 1 inch.....	Racton	1050 lbs.	\$
36 inches long for locks from $\frac{3}{32}$ to 1 inch.....	Rackel	1200 lbs.	\$
42 inches long for locks from $\frac{1}{8}$ to $1\frac{5}{8}$ inch.....	Racktau	1425 lbs.	\$

## Niagara Pipe Folders



For Hand



For Power

Particularly intended for folding the edges of sheets after being formed into cylindrical shape, not less than 5 inch diameter, and will also answer for flat sheets.

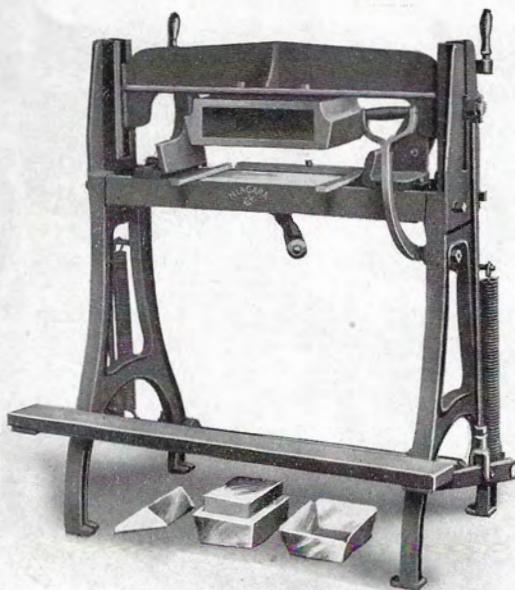
Clutch controls the motion of the Power Pipe Folders.

Each machine is usually made for one width of lock, between  $\frac{1}{4}$  to  $\frac{1}{2}$  inch wide, as may be ordered. Different widths, within these limits, can be provided for.  $\frac{3}{8}$  inch blade is furnished, unless otherwise ordered.

CAPACITY: 36 to 60 inches, No. 22; 96 and 120 inches, No. 24 iron and lighter.

NIAGARA PIPE FOLDERS	For Hand						For Power					
	36	42	48	60	96	120	36	42	48	60	96	120
Length, inches.....	36	42	48	60	96	120	36	42	48	60	96	120
Shipping weight, lbs. ....	500	550	600	650	800	950	1000	1050	1100	1250	1500	1600
Price .....	\$											

## Pan Forming Machines



Used in forming bread pans, roasters and similar work.

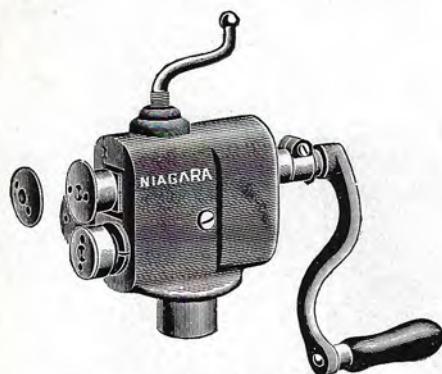
We have several sets of patterns which are used according to the dimensions of the pans, thickness of material, etc. The blanks are previously cut to proper size and notched. The position of the blank on the table is determined by suitable gauges. The foot treadle attachment actuates the plunger, which conforms with the width and shape of the pan, and it is held down while the sides and one end are turned up and the surplus material at two corners laid over onto the end of the pan. Levers, in convenient positions, are used for the different movements. One-half of the pan is first completed and then the work is reversed, to form the other half.

This machine does not turn and wire the top edges of the pans.

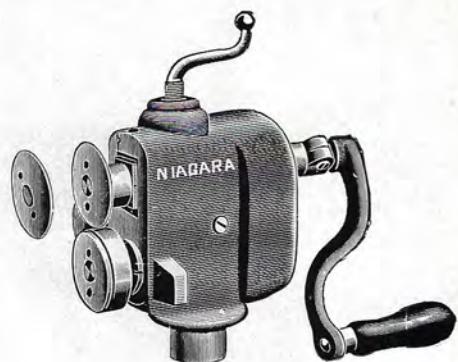
Each width of pan necessitates an extra plunger and end-forming piece. In case various pans are to be formed on which the sides do not have the same flare, additional side wings and corner-forming pieces are also required.

In order to quote we must know the width, length, height and flare of all of the pans to be produced, and the thickness of material.

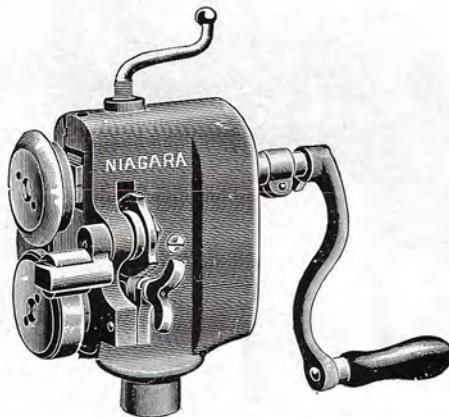
Niagara "Superior" Machines—Encased



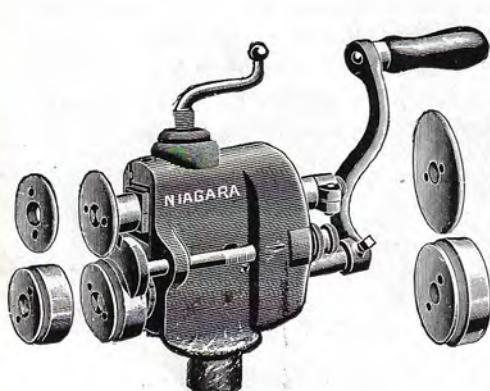
Superior Small Burr



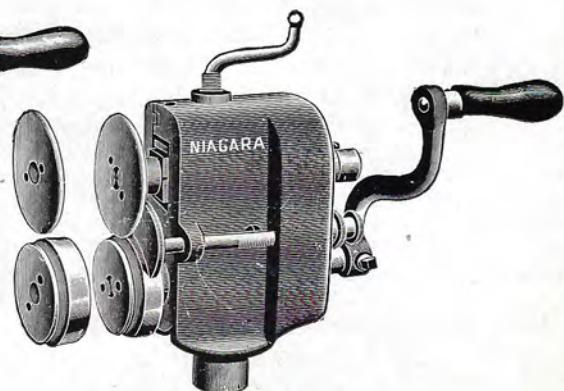
Superior Large Burr



Superior Wiring Machine



Superior Small Turner



Superior Large Turner

## Niagara Superior Machines—Encased

These machines are of modern design. They have extra heavy frames and embody original features.

CRANK SCREW that raises and lowers the upper shaft is in such position that it will not interfere with the work. It moves the upper shaft twice as quickly as that of ordinary machines. The crank screw works in a steel bushing and a spring cushion takes up the strain in going over seams.

GAUGE is made of tool steel.

FACES are removable from the shafts. The upper face and shaft can be adjusted laterally for the thickness of the material.

BEARINGS for lower shaft are made of bronze and adjustable for wear.

INTERCHANGEABLE PARTS are used for Superior Machines. When ordering parts, state factory number of machine.

SUPERIOR ENCASED MACHINES	Between Shaft Centers	Code Word	Shipping Weight	With Standard
Wiring Machine.....	2 $\frac{7}{8}$ inch	Rapsodo	41 lbs.	\$14.00
Large Turner, with extra upper and lower faces .....	2 $\frac{7}{8}$ inch	Raptor	42 lbs.	11.50
Small Turner, with extra upper and lower faces .....	2 $\frac{1}{8}$ inch	Raptus	38 lbs.	11.25
Large Burr, with extra upper face..	2 $\frac{1}{8}$ inch	Rarefy	35 lbs.	10.50
Small Burr, with extra upper face ..	1 $\frac{3}{4}$ inch	Rarete	30 lbs.	10.00
Treadle Attachment, in place of crank screw, extra .....				4.00

Without Standard, 75 cents less.

The Small Superior Standard is furnished with these machines.

### Superior Standard

Owing to the shape of this standard, the socket is in such position that the machine is brought forward beyond the bench. Adjustable for benches varying in thickness from 1 to 3 inches.

	Diameter of Hole	Net Weight	Price
Small Superior Standard....	1 $\frac{5}{8}$ inch	11 lbs.	\$1.00
Large Superior Standard ...	2 $\frac{1}{8}$ inch	21 lbs.	1.50



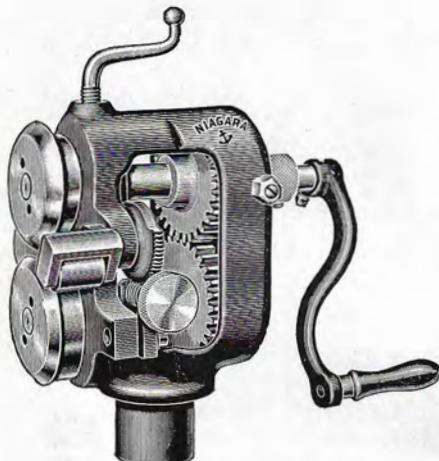
### Tilting Standard

The machine put on this standard can be tilted forward or backward, to permit of varying the angle of the working faces in relation to the material.

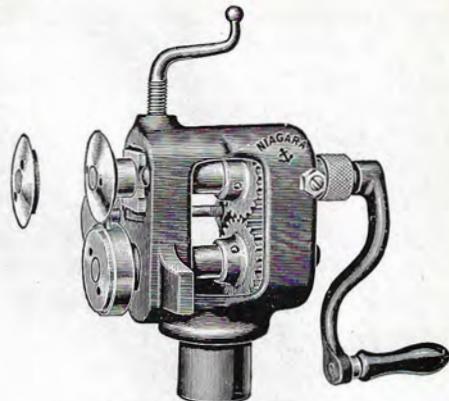
	Net Weight	Price
Superior Tilting Standard.....	14 lbs.	\$1.25



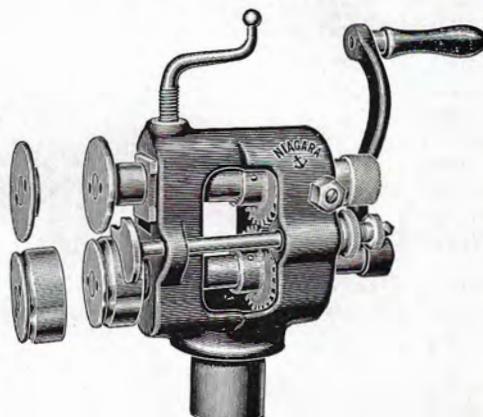
## Buffalo Machines



Buffalo Wiring Machine



Buffalo Large Burr



Buffalo Small Turner

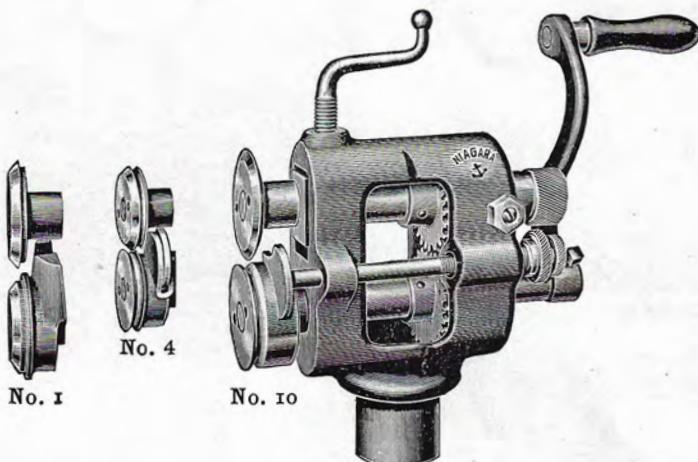
They are similar to our Superior Encased machines. The frame is of one piece and open.

BUFFALO MACHINES	Between Shaft Centers	Code Word	Shipping Weight	With Standard
Wiring Machine.....	2 $\frac{7}{8}$ inch	Rilhar	37 lbs.	\$12.00
Large Turner, with extra upper and lower faces.....	2 $\frac{7}{8}$ inch	Rilim	38 lbs.	10.25
Small Turner, with extra upper and lower faces.....	2 $\frac{1}{8}$ inch	Rillet	33 lbs.	10.00
Extra Small Turner, with extra upper and lower faces.....	1 $\frac{1}{2}$ inch	Rilling	25 lbs.	11.00
Large Burr, with extra upper face..	2 $\frac{1}{8}$ inch	Rillod	32 lbs.	9.00
Small Burr, with extra upper face ..	1 $\frac{1}{2}$ inch	Riluce	25 lbs.	8.50
Treadle Attachment in place of crank screw, extra .....				4.00

Without Standard, 75 cents less.

The Small Superior Standard is furnished with these machines.

## Buffalo Elbow Edging Machine



Used in making the circular joints of elbows. Faces of different types can be furnished. They are usually applied to the Buffalo Small Turner, or can be made for other machines.

Faces type No. 10 (shown on the machine) produce "V" shaped creases on both elbow sections.

Faces type No. 4 are used for the inside and outside edges of riveted elbows with tight or loose joint.

Faces type No. 1 can be used for the outer edge of riveted or grooved elbows. The inner edge is turned on a burring machine. It is desirable to use a special gauge with rounded face in connection with faces No. 1.

The price of the machine includes one pair of either of the three kinds of faces shown. In case of order, state number, indicating type of faces wanted.

	Shipping Weight	With Standard
Buffalo Elbow Edging Machine .....	33 lbs.	\$10.00
Round Face Gauge to Buffalo Edger, extra .....		1.50
Treadle Attachment in place of Crank Screw, extra.....		4.00

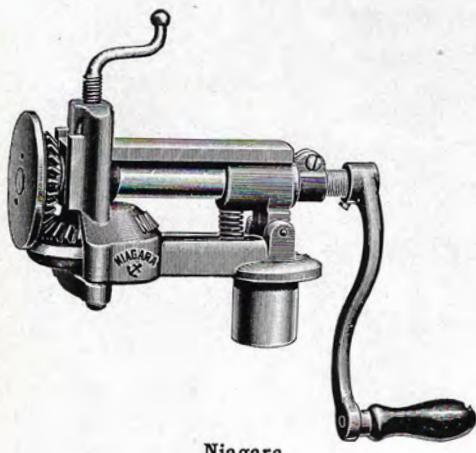
### Floor Standard

Used to support machines when placed away from the work bench. Height 39 inches, diameter of hole  $1\frac{5}{8}$  to  $2\frac{1}{2}$  inches, as may be ordered

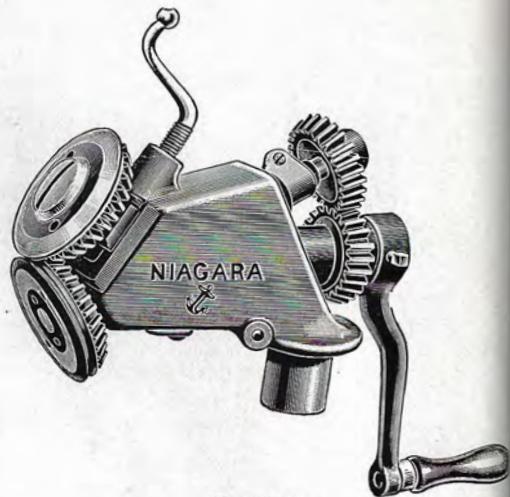
	Code Word	Net Weight	Price
Floor standard .....	Rapsito	100 lbs.	\$5.00



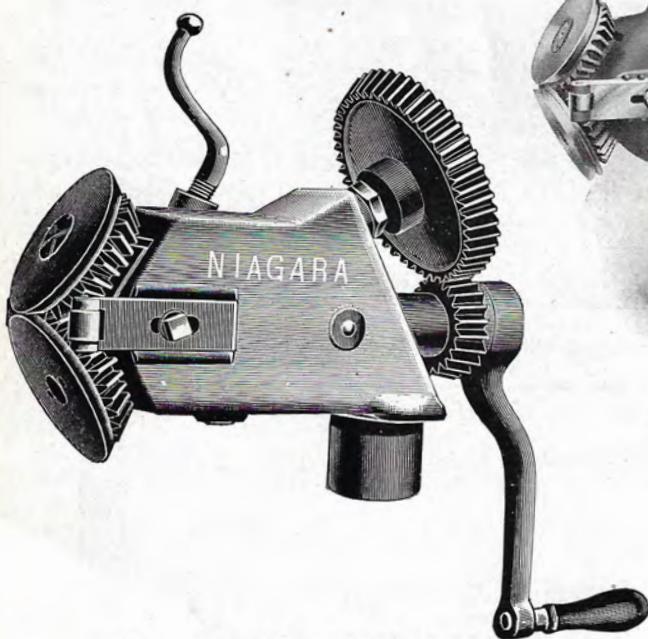
## Setting Down Machines



Niagara



Superior



Heavy Superior, Back Geared



Power Setting Down  
Machine

## Setting Down Machines

These machines turn down and compress the flange of the bottom on to the flange at the end of the body, thereby forming a joint.

### Tinners' Setting Down Machines

#### For No. 24 Iron and Lighter

"SUPERIOR" possesses the advantage that the operator can start the seam inwardly while setting it down, to facilitate double seaming.

Price includes Small Superior Standard.

	For Seams	Code Word	Shipping Weight	With Standard
Superior Setting Down Machine .	$\frac{1}{8}$ to $\frac{3}{16}$ inch	Rascoa	38 lbs.	\$11.00
Niagara Setting Down Machine .	$\frac{5}{32}$ to $\frac{3}{16}$ inch	Rasgar	28 lbs.	9.75
Niagara Setting Down Machine, extra heavy .....	$\frac{3}{16}$ to $\frac{1}{4}$ inch	Rasimus	34 lbs.	11.00

Without Standard, 75 cents less.

### Heavy Setting Down Machines

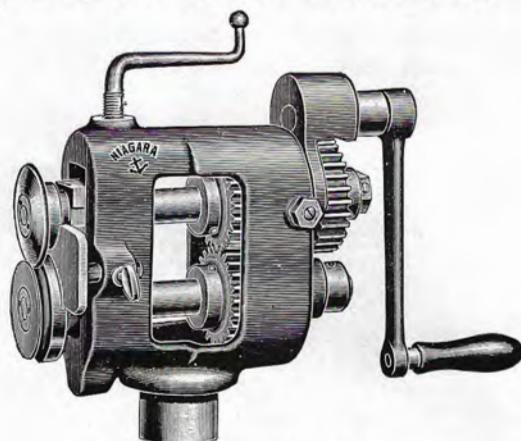
These machines are of substantial design and back geared. The faces are inclined towards one another, which enables the operator to start the seam inwardly while setting it down, to facilitate double seaming. There is a guide roll on each side, adjustable for various diameters.

**HEAVY SUPERIOR SETTING DOWN MACHINE**, suitable for No. 20 iron and lighter, adjustable for seams  $\frac{3}{16}$  to  $\frac{3}{8}$  inch wide. Furnished with Large Superior Standard.

**POWER SETTING DOWN MACHINE** with clutch and pulley, suitable for No. 18 iron and lighter, adjustable for seams  $\frac{1}{4}$  to  $\frac{1}{2}$  inch wide. It has a base that is screwed to the work bench.

	Code Word	Shipping Weight	Price
Heavy Superior Setting Down Machine .....	Raspajo	90 lbs.	\$22.00
Power Setting Down Machine .....	Raspel	140 lbs.	90.00

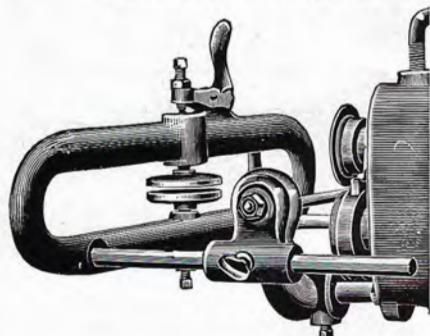
## Heavy Buffalo Machines—Back Geared



For No. 20 Iron and Lighter

Frame, shafts and other parts are much larger and heavier than those of ordinary Tinnery Machines. Cut shows Heavy Superior Turner.

Prices include one pair of faces and gauge for wiring, turning or burring, as may be ordered, and the large Superior Standard.



CIRCULAR ATTACHMENT shown in this illustration, if applied to a Burring Machine, facilitates burring or flanging the edges of round discs 4 to 20 inches diameter. The sheet is clamped between two discs. The Attachment is made to swivel to permit changing the position of the material in relation to the working faces as the burring operation proceeds.

	Diameter of Faces	Code Word	Shipping Weight	With Standard
Heavy Buffalo Wiring Machine ....	3 inch	Rarity	105 lbs.	\$24.00
Heavy Buffalo Turning Machine ...	3 inch	Raros	95 lbs.	23.00
Heavy Buffalo Burring Machine ...	2 $\frac{3}{4}$ inch	Rasados	95 lbs.	22.00
Circular Attachment to Heavy Buffalo Burr, extra .....				16.00

### Swivel Table

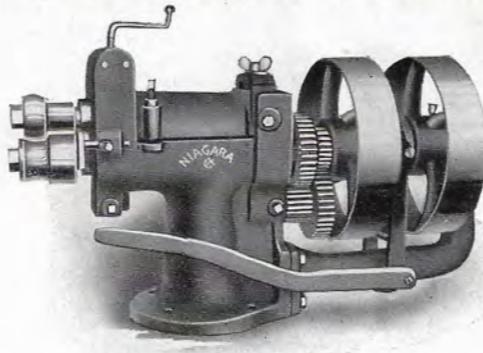
The table which supports the work can be adjusted to various angles in relation to the faces, and can be raised and lowered on the bracket which is attached to the machine.

Can be made for hand operated machines, or for Power Bench Machines, Nos. 6 to 8.

Swivel Table ..... \$10.00



## Niagara Power Bench Machines



No. 8, with Reversing Clutch and Pulley



No. 7, Arranged for Various Operations

When burring, turning, wiring and similar operations are to be performed in manufacturing establishments on a larger scale, it has been found desirable to use machines better adapted to continuous power drive than the ordinary kind intended for Tinsmiths' use.

**CONSTRUCTION.** Substantial frames, long bronze bushed bearings and extra heavy shafts. The upper shaft can be laterally adjusted. The driving shaft is supported at the outer end beyond the pulleys.

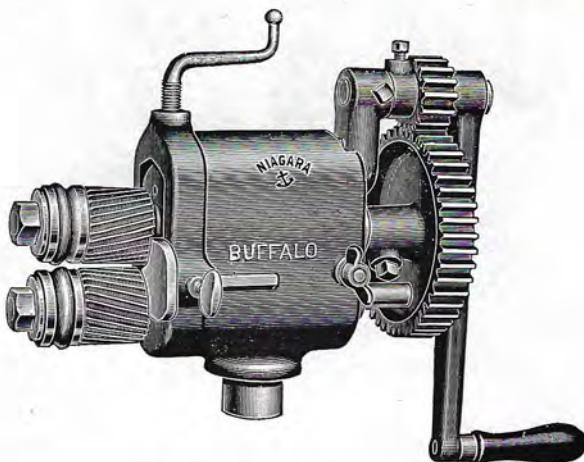
Crank screw is applied for raising and lowering the upper shaft, or a treadle attachment can be used on Nos. 6 and 7.

**WORKING PARTS.** These machines can be arranged for a large variety of work, and the working rolls and gauges are made in each case to suit the requirements, which should be fully explained.

**DRIVE.** The machines are equipped either with T and L Pulleys or with single clutch and pulley, or with double clutch and two pulleys for reversing drive.

POWER BENCH MACHINES		No. 6	No. 7	No. 8
Shaft diameter . . . . .	inches	7/8	1 1/8	1 1/2
Usually made for rolls in length . . . . .	inches	1	1	2 7/8
Distance between shaft centers . . . . .	inches	1 5/8	2 1/8	2 1/4
Size of T & L Pulleys . . . . .	inches	12 x 2 1/2	12 x 2 1/2	12 x 2 1/2
Ratio of gearing . . . . .				2:1
Shipping weight . . . . .	lbs.	115	160	200
Price without faces and gauges . . . . .		\$40.00	\$50.00	\$65.00
Code word, without faces and gauges . . . . .		Ratsbane	Rattach	Rattar
Clutch and pulley, extra . . . . .				\$20.00
Double Reversing Clutch and pulleys, extra . . . . .				30.00
Treadle Attachment in place of crank screw to Nos. 6 and 7, extra . . . . .				4.00

## Buffalo Crimper and Beader—Two Speeds



For No. 20 Iron and Lighter

Intended to facilitate joining lengths of sheet metal pipe. The end of the pipe is contracted by crimping, and it can be beaded at the same time. The connecting gears are cut of steel, and the parts are interchangeable.

**TWO SPEEDS.** This machine can be operated either geared from the back gear shaft, at reduced speed, for heavier material, or direct with the handle on the lower shaft, faster for light stock.

**ADJUSTMENT.** The relative depth of the crimp and bead can be regulated quickly and with ease. A distinct crimp and shallow bead can be obtained, or vice versa, or crimp and bead can be made uniform. The adjustment is made by means of two wing nuts. By loosening one and tightening the other, the upper shaft is tipped either towards the front, or towards the handle end, as may be desired.

**ROLLS** are made of steel and hardened. Length of crimping rolls,  $1\frac{3}{4}$  inches; length of beading rolls, 1 inch; distance between shaft centers,  $1\frac{1}{8}$  inches. Rolls with spiral crimp, as shown in the illustration, are furnished unless rolls with straight crimp are ordered.

A pair of plain collars is furnished to take the place of the beading rolls when crimping alone is to be done.

	Code Word	Shipping Weight	With Standard
Buffalo Crimper and Beader.....	Ravinat	60 lbs.	\$12.00
Treadle Attachment in place of crank screw, extra .....			4.00
Plain collars to take place of crimping rolls, per pair, extra .....			1.50



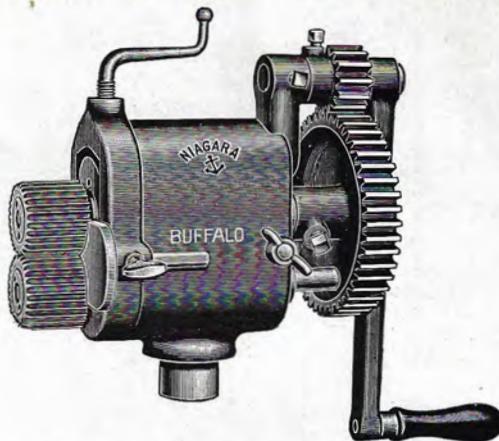
Rowe's Pipe Crimper

For No. 20 Iron and Lighter

It makes a gradual taper to facilitate joining lengths of pipe. Can also be used for enlarging ends of pipe by crimping and then flattening out.

	Code Word	Net Weight	Price
Rowe's Pipe Crimper.....	Razeil	$2\frac{1}{4}$ lbs.	\$1.20

## Buffalo Cornice Makers' Crimpers



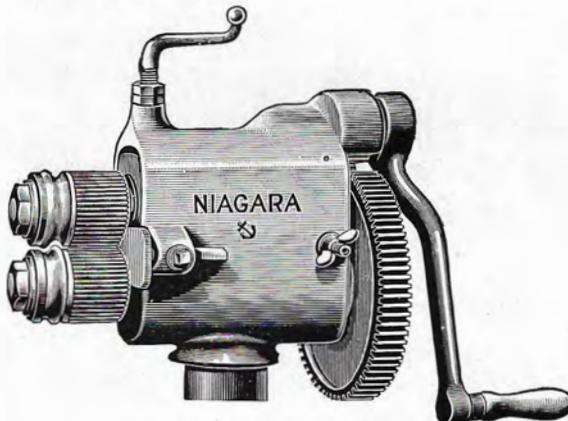
These machines carry crimping rolls only, and the shafts do not extend beyond the outer end of the rolls, to enable the operator to crimp close up to a bend.

No. 1 for No. 22 iron and lighter. Can be operated either from the back gear shaft, at reduced speed, for heavier stock, or, with the handle on the lower shaft, faster for light material.

No. 2 for No. 18 iron and lighter (similar to Heavy Crimper and Beader).

	Code Word	Shipping Weight	With Standard
No. 1 Cornice Maker's Crimper .....	Rayar	57 lbs.	\$12.00
No. 2 Heavy Cornice Maker's Crimper, geared ..	Riganda	120 lbs.	30.00

## Heavy Crimper and Beader—Geared



### For No. 18 Iron and Lighter

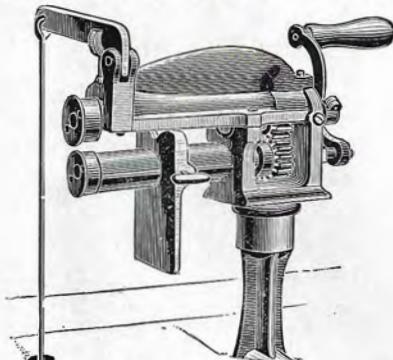
This machine has very substantial frame and parts. The connecting gears are cut of steel.

ADJUSTMENT is provided to regulate the relative depths of the crimp and bead, the same means being provided for this purpose as on the Buffalo Crimpers and Beaders.

ROLLS are made of steel and hardened. Distance between shaft centers,  $2\frac{5}{8}$  inches; length of crimping rolls,  $1\frac{3}{4}$  inches; length of beading rolls,  $1\frac{1}{4}$  inches. A pair of plain collars, to take the place of the beading rolls, is furnished.

	Code Word	Shipping Weight	With Standard
Heavy Crimper and Beader, geared .....	Rawley	125 lbs.	\$30.00
Plain Collars to take place of crimping rolls, per pair, extra .....			3.00

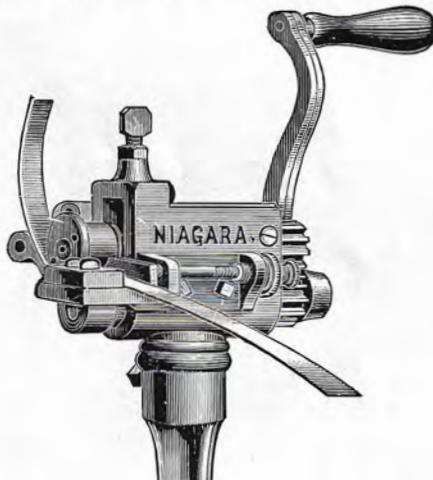
## Niagara Crimping Machines



For crimping plain bottoms on to the bodies of cylindrical articles made of light tin. The top shaft is actuated by treadle attachment. The gauge is adjustable. Price includes Superior Standard.

NIAGARA CRIMPING MACHINE	No. 1	No. 2
Diameter of work not less than . . . . . inches	2½	1½
Length of work not more than . . . . . inches	7½	6
Code word . . . . .	Rayons	Razago
Shipping weight . . . . . lbs.	100	40
Price . . . . .	\$20.00	\$15.00

## Niagara Encased Rim Machine



For No. 26 Iron and Lighter

For making rims for covers of tinware.

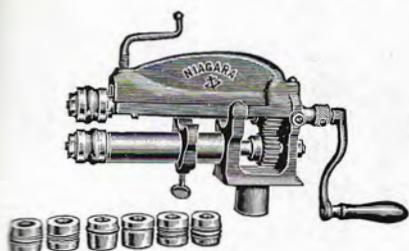
The one edge of the material is flanged and the other edge drawn in, while the rim is being curved.

Adjustable for rims from  $\frac{3}{8}$  to  $1\frac{1}{4}$  inch wide, 2 inches diameter and larger.

The regular faces will turn a flange not to exceed  $\frac{3}{16}$  inch wide. Special faces can be made, at extra cost, to turn a  $\frac{1}{4}$  inch flange on 3X or 4X tin, or for putting the flange towards the inside of the rim.

	Code Word	Shipping Weight	With Standard
Niagara Encased Rim Machine . . . . .	Razaren	40 lbs.	\$18.00

## Niagara Beading Machines



No. 4

Intended for ornamenting and stiffening tinware and other sheet metal goods. Nos. 1 to 3 are back geared, and Nos. 4 and 5 direct-acting.

### CAPACITIES—

Nos. 1 to 3, No. 20 iron and lighter.

No. 4, No. 26 iron and lighter.

No. 5, for tin and light material.

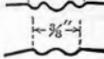
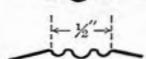
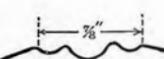
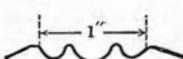
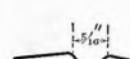
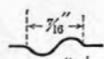
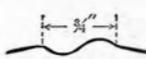
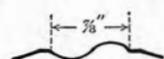
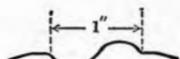
### LENGTH OF ROLLS—

$1\frac{1}{8}$  inch.

$\frac{7}{8}$  inch.

$1\frac{1}{16}$  inch.

Regular Rolls of steel and hardened included in the prices.



No. 1 & 2

No. 3

No. 4

No. 5

INTERCHANGEABLE PARTS are used for these machines. State factory number of machine when ordering parts.

	Throat	Code Word	Shipping Weight	With Standard
No. 1 Beader, with 3 pairs rolls ..	13 inch	Rasuros	170 lbs.	\$32.25
No. 2 Beader, with 3 pairs rolls ..	10 inch	Ratably	160 lbs.	31.25
No. 3 Beader, with 3 pairs rolls ..	7 $\frac{1}{2}$ inch	Rataplan	100 lbs.	26.25
No. 4 Beader, with 4 pairs rolls ..	6 inch	Ratelons	50 lbs.	19.75
No. 5 Beader, with 5 pairs rolls ..	4 inch	Rathbar	35 lbs.	16.75

Price includes Superior Standard, small size for Nos. 4 and 5, large for Nos. 1 to 3.

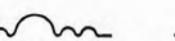
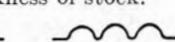
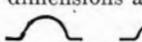
T & L Pulleys and fixed standard to screw to the bench to Nos. 1, 2 and 3, extra .... \$12.00

Extension to lower shaft and guide roll Nos. 1, 2 and 3, extra ..... 2.00

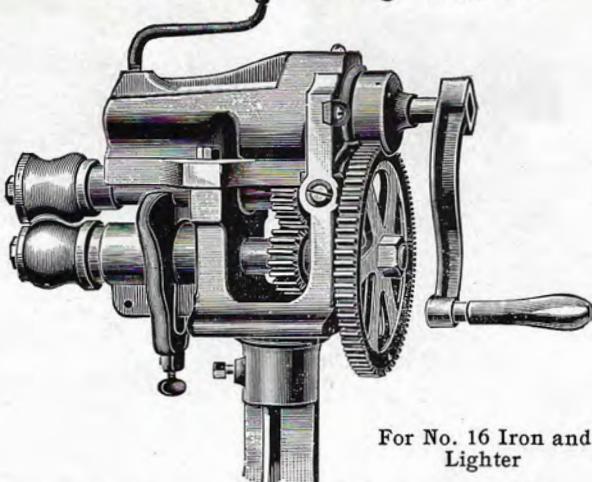
CRIMPING ROLLS, to be used in place of the Beading Rolls, can be furnished and an extension to the regular gauge should then be applied.

FOR BEADERS	Nos. 1 or 2	No. 3	No. 4	No. 5
Crimping Rolls, per pair.....	\$6.00	\$5.00	\$3.50	\$2.50
Extension Gauge.....	2.50	2.50	2.00	2.00

SPECIAL ROLLS can be made to order at proper charge. These are some of the shapes for which Beading Rolls can be supplied. Inquiries should give shapes, dimensions and thickness of stock.



## No. 02½ Beading Machine



This machine is compact and powerful. It will bead up to 4 inches from the edge of the sheet. Ratio of gearing 1:4.

We furnish one pair of rolls for O. G. 2½ inches wide. Length of rolls 2⅞ inches, diameter 2⅜ inches. Special rolls can be made to order.

Price of hand machine includes the large Superior Standard. Fixed standard to screw to the work bench is furnished, if the machine is ordered for power drive.

No. 02½ BEADER	Code Word	Shipping Weight	Price
For hand . . . . .	Ratillon	145 lbs.	\$30.00
With T & L Pulleys and fixed standard . . . . .	Ratjer	200 lbs.	42.00

## Deep Throat Beaders



No. 25 with Clutch and Pulley

Intended for work where beading must be done a considerable distance from the edge. CAPACITY.—No. 10, single bead  $\frac{1}{2}$  inch wide on No. 26.

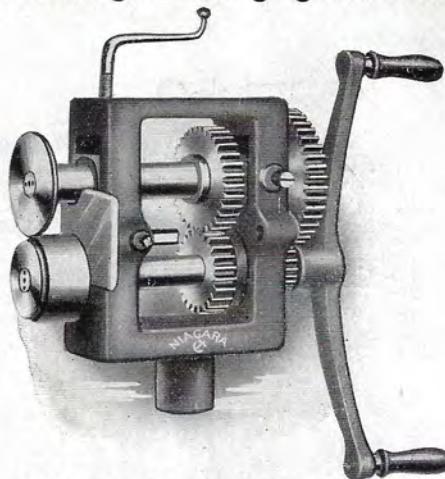
No. 25, single bead  $\frac{1}{2}$  inch wide on No. 20.

The horn surrounding lower shaft of No. 25 is 4 inches diameter.  
Price includes one pair of single bead rolls.

	Code Word	Shipping Weight	Price
No. 10, 20 inch Deep Throat Beader . . . . .	Raubwild	175 lbs.	\$40.00
No. 25, 28 inch Deep Throat Beader . . . . .	Raubwolf	340 lbs.	70.00
Clutch and Pulley to No. 25, extra . . . . .			30.00
Special Floor Standard, extra . . . . .			12.00

These machines are sometimes arranged for joining sections of round furnace pipe by beading the two telescoping sections.

## No. 5 Niagara Flanging Machine



### For No. 16 Iron and Lighter

Suitable for turning rounded flanges higher than those obtainable on ordinary machines.

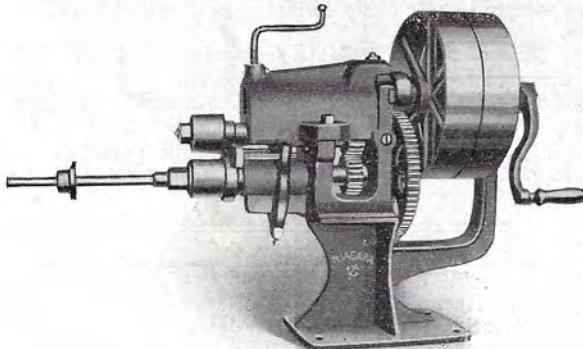
Extreme height of flange  $1\frac{1}{2}$  inches with rounded corner about  $\frac{1}{4}$  inch radius. The machine is back geared at the ratio of 3:1, and it has a double handle.

FACES, made of steel and hardened, are  $3\frac{1}{2}$  inches from center to center.

BURRING FACES can be applied to produce a sharper edge with a radius of about  $\frac{1}{8}$  inch, not more than  $\frac{1}{2}$  inch high on work up to 2 feet diameter, and not more than  $\frac{5}{8}$  inch high on larger diameters.

	Code Word	Shipping Weight	With Standard
No. 5 Flanging Machine.....	Rigabor	105 lbs.	\$37.50
Burring Faces, per pair, extra .....			6.00

## No. 02 Flanging Machine



### For No. 16 Iron and Lighter

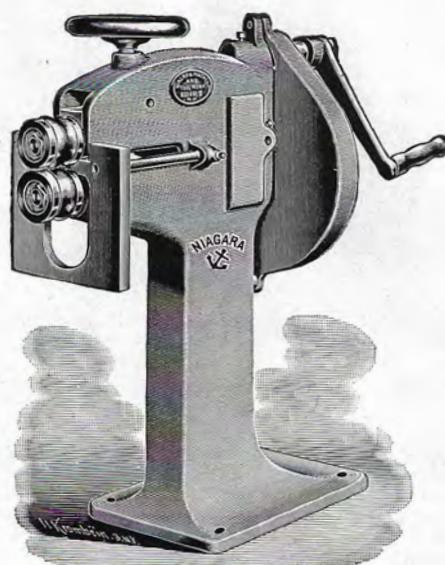
Arranged for flanging the ends of cylinders.

Extension to lower shaft, 14 inches long, carries a guide roll, and supports the work while being flanged.

FLANGES can be  $\frac{3}{16}$  to  $\frac{1}{2}$  inch. For  $\frac{1}{2}$  inch flange, the work must not be less than 14 inch diameter, No. 16 gauge;  $\frac{3}{8}$  inch flange on No. 20. On lighter stock the height of the flange must be decreased.

No. 02 FLANGING MACHINE	Code Word	Shipping Weight	Price
For hand .....	Rauced	160 lbs.	\$40.00
With T & L Pulleys and fixed standard .....		210 lbs.	52.00
With Clutch and fixed standard .....			70.00

## Heavy Beading Machines



No. 0

Designed for beading, flanging, corrugating and similar operations on heavy material, in making furnace shells, sheet metal drums, etc.

NOS. 0 and 0-A. The upper roll shaft has a swinging motion and is raised and lowered by hand wheel.

Price includes a pair of rolls for 1 $\frac{3}{4}$  O. G. bead.

NOS. 100 and 100-A. The upper shaft is raised and lowered parallel to the other shaft by means of eccentrics and worm gearing, giving a steady and powerful motion.

Price includes a pair of rolls 3 $\frac{1}{2}$  inches long for 2 inch O. G. bead.

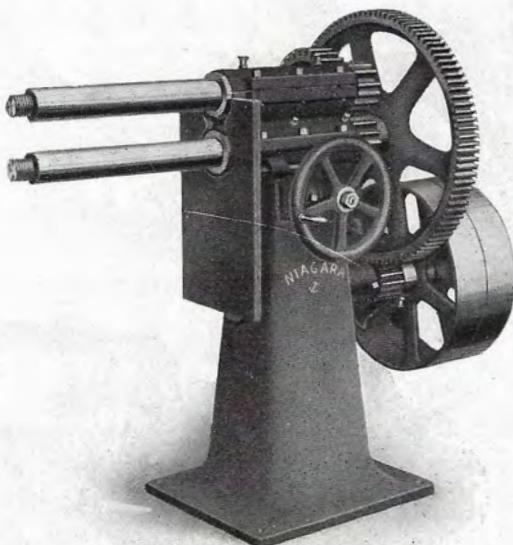
EXTENSION SUPPORT with adjustable guide roll can be added to lower shaft at extra charge, to carry the work while it is being operated upon.

HEAVY BEADERS	No. 0	0-A	100	100-A
Capacity, with regular rolls.....No.	14	16	10	12
Depth of throat .....inches	10 $\frac{1}{2}$	15	7 $\frac{1}{2}$	15
Distance between shaft centers inches	4	4	6 to 8	6 to 8
Diameter of regular rolls.....inches	4	4	6	6
Length of shaft ends for rolls inches	3	3	7	7
Diameter of shaft in bearings inches	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Ratio of gearing .....	6 $\frac{1}{2}$ :1	6 $\frac{1}{2}$ :1	7:1	7:1
Price for hand .....	\$	\$	\$	\$
Price with T. & L. Pulleys.....	\$	\$	\$	\$
Shipping weight .....lbs.	720	900	1600	1900
Price with Clutch and Pulley.....	\$	\$	\$	\$
Extension Support, 36 in. long, extra.	\$	\$	\$	\$

SPECIAL ROLLS are charged for extra according to the requirements.

FLANGING ROLLS for cylinders can be furnished to Beaders Nos. 0 and 100, the obtainable height of the flanges being limited as follows:  $\frac{3}{8}$  inch on No. 20;  $\frac{1}{2}$  inch on No. 16;  $\frac{5}{8}$  inch on No. 14;  $\frac{3}{4}$  inch on No. 10.

## Niagara Beading and Flanging Machine, No. 30.



This machine can be arranged for performing beading, flanging, corrugating and similar operations on sheet metal. The working parts are made and charged for according to the nature of the work to be performed.

**UPPER ROLL SHAFT** is mounted in a swinging frame, and it is raised and lowered parallel to the lower shaft by means of hand wheel and screw. For lighter material treadle attachment can be applied, at extra charge.

**EXTENSION** to the lower roll shaft is frequently applied to support cylindrical work while being operated upon.

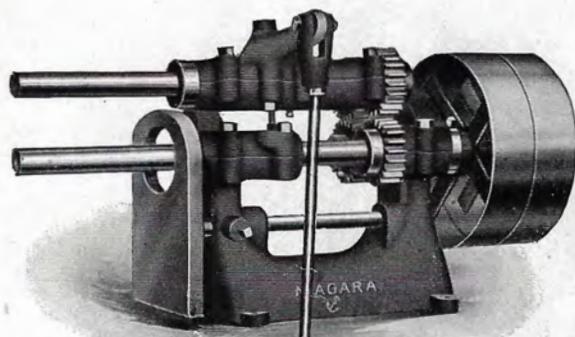
**CAPACITY.** The thickness of heaviest material for which the machine will answer depends upon the nature of the work.

BEADER AND FLANGER	No. 30
Standard length of shafts beyond frame .....	inches 12
Diameter of shafts in bearings .....	inches 2 $\frac{7}{8}$
Standard distance between shaft centers .....	inches 5 $\frac{1}{8}$
Usual length of rolls .....	inches 3 $\frac{1}{2}$
Ratio of gearing .....	7:1
Size of T and L Pulleys .....	inches 20 x 4
Shipping weight .....	lbs. 1200
Price, with T and L Pulleys, not including rolls, extension or gauge .....	\$
Code word .....	Raudus
With Jaw Clutch and Pulley, instead of T and L Pulleys .....	\$

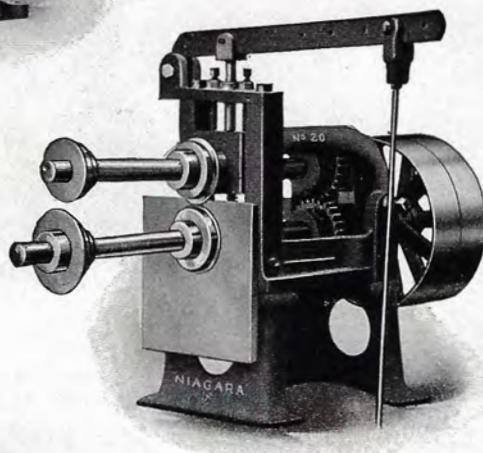
### Special Machines for Beading, etc.

In addition to the regular machines, we have a variety of patterns that can be used for special work, according to the requirements. Inquiries should be accompanied by full particulars of the work to be performed.

## Power Flanging and Beading Machines.



No. 20-A



No. 20

Intended for a variety of work, such as crimping on the bottoms of cans, beading, mouthing, flanging preparatory to double seaming, etc. Two or more of these operations can sometimes be performed simultaneously.

Nos. 10A and 20A. The upper shaft swings parallel to the lower one.

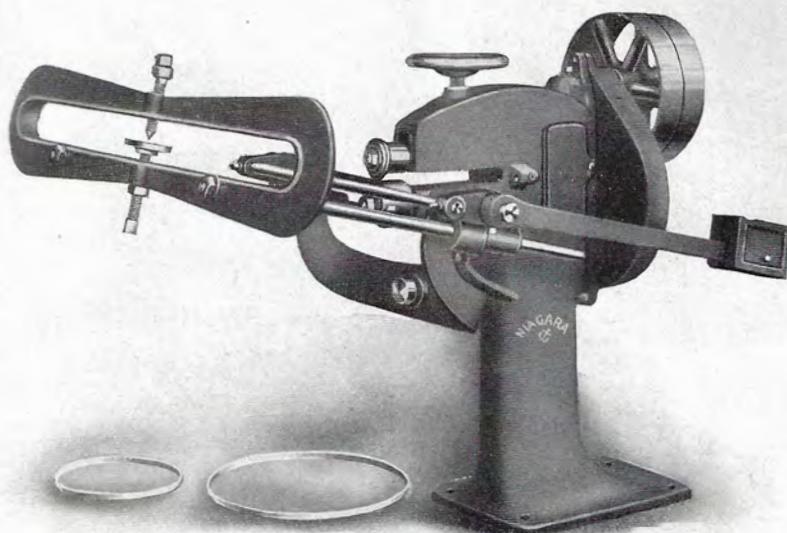
Nos. 10 and 20. The upper shaft is pivoted at the gear end.

INCLINABLE APRON with guide rolls is required for taper articles. It can be set at various angles according to the taper of the work.

WORKING PARTS are furnished to suit the nature of the work and charged for accordingly. Inquiries should give full particulars.

FLANGING AND BEADING MACHINES	No. 10-A	No. 20-A	No. 10	No. 20
For work in length up to... inches	10	15	12	18
Standard distance between shaft centers..... inches	2	4	2½	4
Diameter of shafts..... inches	1	1½	1½	1½
Size of T and L Pulleys..... inches	8 x 2½	12 x 3	8 x 2½	10 x 3
Speed of pulleys..... R. P. M.	200	175	200	175
Shipping weight..... lbs.	135	325	135	350
Price with fixed apron gauge, no rolls	\$	\$	\$	\$
Code word .....	Raulim	Rauman	Rauque	Raurie
Inclinable apron, extra.....	\$	\$	\$	\$

## Niagara Bottom Flanging Machine



No. 0

For flanging round bottoms. The round disc to be flanged is centered and held in the yoke carried on the counterbalanced swivel arm.

With the flanging attachment removed, and the proper rolls substituted, the machines can be used for beading operations, flanging cylinders, etc.

The yoke is gradually raised until the flange is turned as far as desired, not to exceed right angles. The obtainable height of the flanges depends upon the thickness and quality of the stock and the expectations as to smoothness.

T and L Pulleys are provided, unless Clutch and Pulley are ordered.

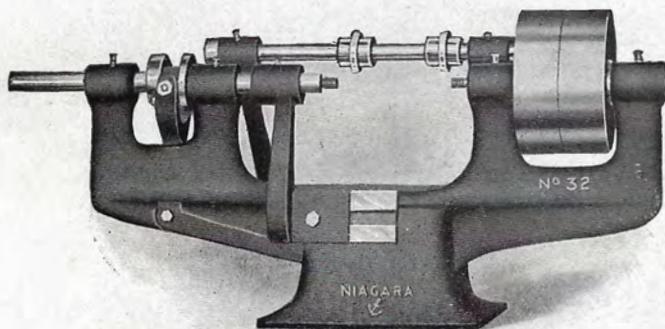
No. 0 will flange bottoms of No. 12 to No. 18 iron, from 10 to 48 inches diameter. On No. 12 gauge the flange can be up to  $\frac{7}{8}$  inch high; on No. 14 up to  $\frac{3}{4}$  inch high, and on lighter gauges  $\frac{5}{8}$  inch,  $\frac{1}{2}$  inch or less.

No. 00 is made off the patterns of our No. 00 Beader. Will flange bottoms of No. 8 to 18 gauge, from 14 to 60 inches diameter. On No. 8 to No. 10 gauge iron a 1 inch flange can be obtained. On lighter stock the limitations are the same as on No. 0.

BOTTOM FLANGING MACHINE	Code Word	Shipping Weight	Price
No. 0, with T and L Pulleys.....	Raubzug	1150 lbs.	\$
No. 00, with T and L Pulleys.....	Raufen	2400 lbs.	\$
No. 0, with Clutch and Pulley.....	.....	.....	\$
No. 00, with Clutch and Pulley.....	.....	.....	\$

Price includes one pair of flanging rolls.

## Niagara Double Head Crimpers



Intended for crimping the ends of round cans on to the bodies, one end only, or both at the same time.

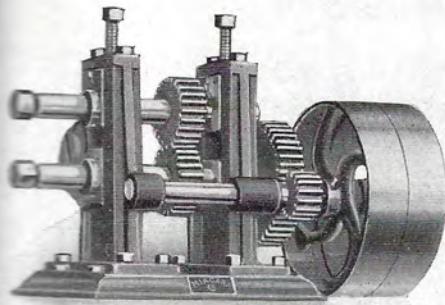
By depressing the foot treadle the can is clamped between chucks of proper size and shape and the crimping rolls are brought into action. When the operator releases the treadle, the chucks recede and the crimped can drops out toward the back of the machine.

An adjustable bracket supports the inner end of the shaft that carries the movable clamping chuck. This is particularly desirable when the cans are short.

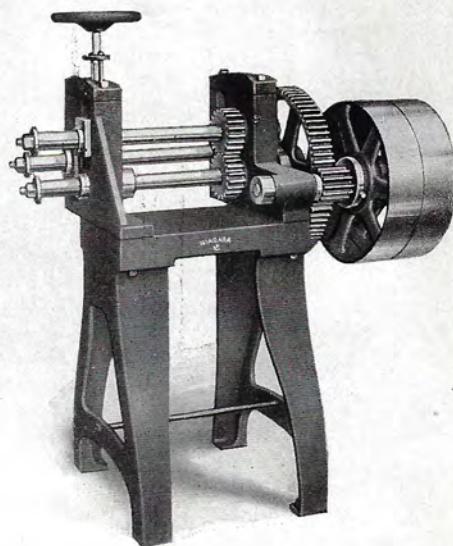
DOUBLE HEAD CRIMPERS	No. 31	No. 32
Will receive cans in length up to . . . . . inches	7	10
Will receive cans in diameter up to . . . . . inches	7	10
Size of T and L Pulleys . . . . . inches	6 x 2	8 x 2 1/2
Speed of T and L Pulleys . . . . . R. P. M.	300	250
Shipping weight . . . . . lbs.	180	300
Price, with crimping rolls, no clamping chucks . . . . .	\$ Rausim	\$ Rausse
Code word . . . . .		

A pair of clamping chucks is required for each size of can. The can ends must be stamped with a slight recess to permit centering the cans.

## Niagara Forming and Bending Machines



No. 1



No. 2

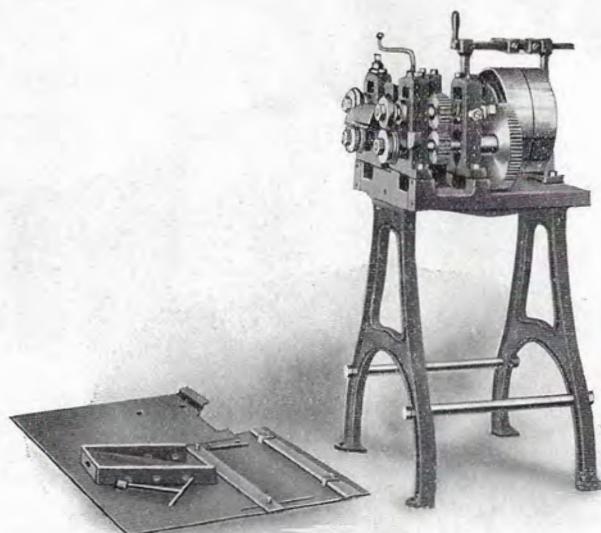
These machines are used for bending and forming operations on strips of sheet metal.

**WORKING ROLLS**, gauges and other attachments are made according to the nature of the work, which should be fully explained in case of inquiries. The rolls are placed either outside of the housings, or between them. Several sets of rolls may be applied to the machine at the same time to take care of a corresponding number of operations without exchanging working parts.

When the material is to be curved, a third roll, or a suitable forming piece, is applied.

FORMING AND BENDING MACHINES	No. 1	No. 2
Distance between shaft centers, standard .....	inches	3 $\frac{1}{2}$
Diameter of shafts .....	inches	1 $\frac{3}{4}$
Size of T and L Pulleys .....	inches	12 x 2 $\frac{1}{2}$
Speed of pulleys .....	R. P. M.	135
Ratio of gearing .....		3 $\frac{1}{3}$ :1
Shipping weight .....	lbs.	300
Price with two shafts, not including rolls or gauges .....	\$	850
Code word .....	Readorn	Reaffirm

## Wire Edging Machine



These machines are intended for producing wire edges on flat sheets with straight and parallel edges, at one passage through the machine. Beading and wiring can be done at the same time, if so arranged.

The wire to be enclosed in the edge of the stock enters the machine ahead of the first set of faces. The sheet is supported by an inclined table with gauges adjustable to suit the width of the material.

WORKING PARTS are required to conform with each variation in the thickness of the material and the diameter of the wire. They must be fitted to the machine at our factory.

INQUIRIES should be accompanied by the following information:

Kind of material (whether iron, copper, etc., soft or hard).

Thickness of material for each diameter of wire.

Size of wire for each thickness of material.

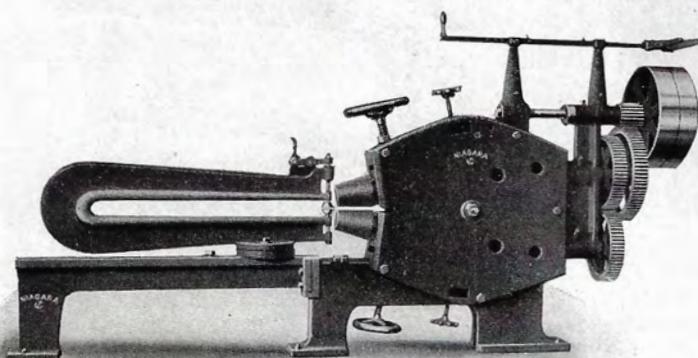
Width of sheets, giving narrowest and widest dimensions.

Whether the wire is to be entirely on one side of the sheet, or partly on each side.

Degree of straightness and smoothness expected of the wire edge.

WIRE EDGING MACHINE	No. 1	No. 2
Thickness of material .....	No.	24 to 30
Diameter of wire .....	inches	$\frac{1}{8}$ to $\frac{5}{16}$
Distance between shaft centers .....	inches	3
Size of feed table .....	inches	$18 \times 30$
Size of T and L Pulleys .....	inches	$12 \times 2\frac{1}{2}$
Speed of pulleys .....	R. P. M.	125
Ratio of gearing .....		$1:3\frac{1}{2}$
Shipping weight .....	lbs.	500
		20 to 26
		$\frac{1}{8}$ to $\frac{5}{16}$
		$3\frac{1}{2}$
		$24 \times 48$
		$14 \times 3\frac{1}{4}$
		185
		1:6
		700

## Corrugating Machine for Metallic Gaskets



Designed for corrugating gaskets of light sheet copper, iron or brass.

The discs can be cut by means of Ring and Circle Shears, which are used for cutting the outer circle as well as for cutting out the center, after the rim is corrugated, unless the inside diameter is so small that the holes must be punched.

CLAMPING ARM is adjustable for discs from 3 to 48 inches diameter.

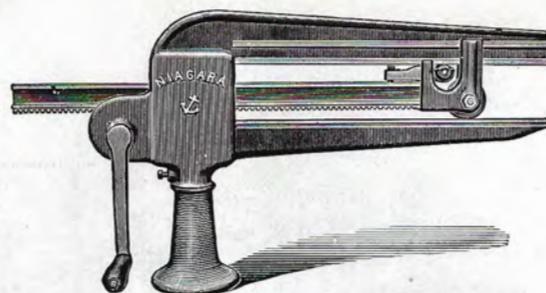
ROLL SHAFTS are inclined and driven by universal couplings from parallel shafts. The angle of the inclined shafts can be varied as required for different diameters and to pinch the material more or less in the inner or outer corrugations. The ends of the roll shaft can be raised or lowered by means of hand wheels.

ROLLS are 5 inches long and made to conform with the desired pitch and shape of the corrugations.

INQUIRIES should be accompanied by samples or drawings showing the desired corrugations, and indicating the thickness and kind of material to be used.

	Code Word	Shipping Weight	Price
Corrugating Machine for Metallic Gaskets with one pair of rolls .....	Rigobert	1720 lbs.	\$

## Buffalo Groover

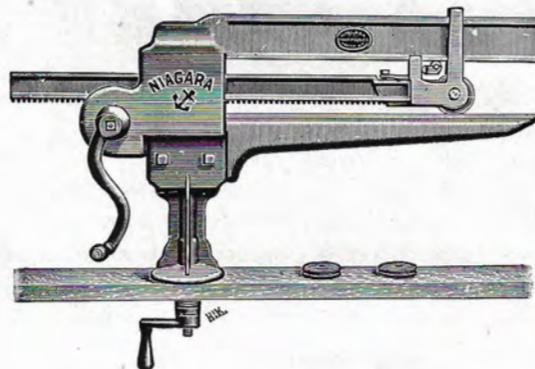


For No. 24 Iron and Lighter

This machine is of neat design and stronger than the ordinary Tinners' Groovers. ANTI-FRICTION ROLLER, which takes the upward pressure, runs in an oil bath. PRICE includes 3 grooved rolls,  $\frac{5}{32}$ ,  $\frac{3}{16}$  and  $\frac{1}{4}$  inch.

	Code Word	Shipping Weight	Price
20 inch Buffalo Groover .....	Reagudo	105 lbs.	\$13.50

## Stow's Brass Mounted Groover

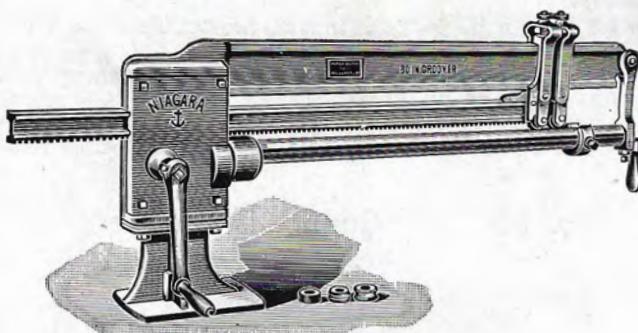


For No. 24 Iron and Lighter

Intended for use of tinsmiths, etc.  
PRICE includes 3 grooved rolls,  $\frac{5}{32}$ ,  $\frac{3}{16}$  and  $\frac{1}{4}$  inch.

	Code Word	Shipping Weight	Price
20 inch Stow's Groover .....	Realist	100 lbs.	\$13.50

## No. 2 Niagara Groover



For No. 24 Iron and Lighter

Arranged for grooving and flattening the seam. The grooving roll is in action on the way forward and the flattening roll on the return trip, the change taking place automatically. This arrangement saves time and insures a good seam without straining the machine.

**ROUND HORN** is reversible and of such diameter that work 2 inches diameter and larger can be grooved, either towards the inside or towards the outside. The horn carries a stop which can be adjusted according to the length of the work.

**SEAM.** Inside seam is obtained by using the flat rolls and pressing the seam into one of the grooves planed into the horn. The grooved rolls are used for outside seams.

**ROLLS.** Price includes two flat and three grooved rolls,  $\frac{5}{32}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  inch wide. Width of grooves in horn  $\frac{5}{32}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$  inch.

**SPECIAL NIAGARA GROOVERS** can be made for square pipe with seam in the corner, for taper work, for work smaller than 2 inch diameter, etc. Inquiries should state the length and diameter of work, thickness of material, width, kind and location of seam, etc.

	Code Word	Shipping Weight	With Standard
20 inch No. 2 Niagara Groover.....	Rebanego	170 lbs.	\$22.00
30 inch No. 2 Niagara Groover.....	Rebater	190 lbs.	25.00
36 inch No. 2 Niagara Groover.....	Rebeber	215 lbs.	30.00

## Queen City Groovers

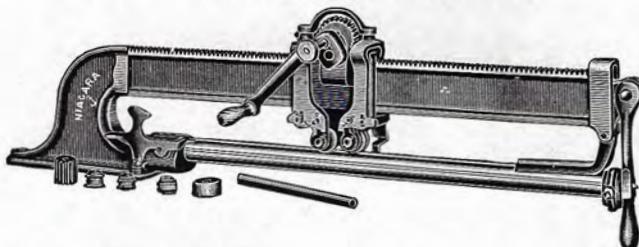
Arranged for grooving and flattening the seam. The grooving roll is in action on the way forward and the flattening roll on the return trip, the change taking place automatically.

SEAM can be grooved towards the inside or towards the outside of the work.

STOPS. A clamp at the rear end of the horn holds the work, and hinged and collar stops are provided at the outer end. A guide attached to the carriage fixes the lateral position of the folded edge.

ADJUSTMENT can be made for various thicknesses of material and for the tightness of the seam. The upward pressure is taken up by anti-friction rolls.

### No. 1-30 inch Queen City Groover

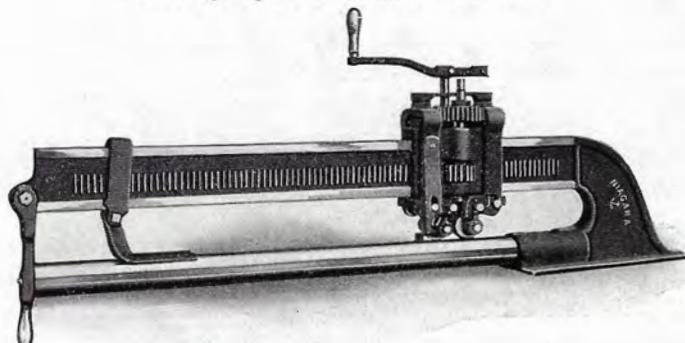


CAPACITY. No. 24 iron and lighter, for work 2 inch diameter and larger.

ROLLS. Price includes four grooved rolls,  $\frac{3}{16}$ ,  $\frac{5}{16}$ ,  $\frac{7}{16}$  and  $\frac{9}{16}$  inch, and two flattening rolls. The round horn has grooves of the same width as the grooves in the rolls.

SPEED. The gears on the grooving carriage provide for two speeds, used according to the thickness of the material, and on very light material the carriage can be pushed over the work by means of a rod. The crank handle can be used on either side of the frame.

### Heavy Queen City Groovers



No. 3, 36 inches long, No. 20 iron and lighter, horn  $2\frac{3}{4}$  inch diameter.

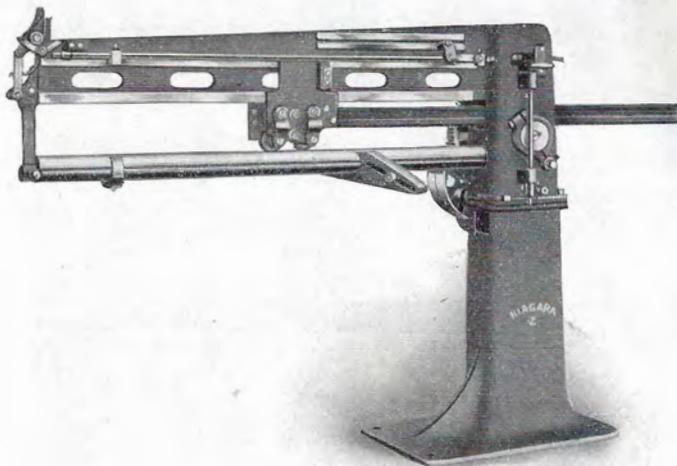
No. 4, 48 inches long, No. 20 iron and lighter, horn  $3\frac{1}{4}$  inch diameter.

ROLLS. Price includes three grooved rolls,  $\frac{5}{16}$ ,  $\frac{7}{16}$  and  $\frac{9}{16}$  inch, and two flattening rolls. The round horn has grooves of the same width as the grooves in the rolls.

SPEED. Heavy Queen City Groovers can be operated either direct or back geared, and with long or short leverage of the crank handle, according to the thickness of the material.

QUEEN CITY GROOVERS	Code Word	Shipping Weight	Price
No. 1, 30 inches long .....	Rebel	155 lbs.	\$30.00
No. 3, 36 inches long, geared.....	Rebezos	360 lbs.	50.00
No. 4, 48 inches long, geared.....	Reblaus	450 lbs.	70.00

## Niagara Power Groovers



No. 2

Intended for grooving and closing the longitudinal seams of sheet metal cylinders, etc. SEAM can be grooved towards the inside or outside. For outside seam a grooved roll is used with the flat surface of the horn turned upwards. For inside seam, flat rolls press the seam into one of the grooves of the horn.

TRAVELING CARRIAGE has two rolls, one of which grooves and the other flattens the seam. The rolls can be adjusted independently to suit the thickness of the material and tightness of the seam.

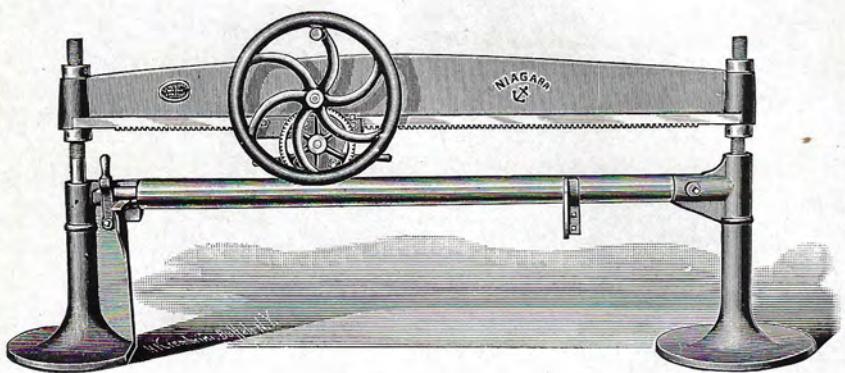
STOPS. Two adjustable stops are provided on the horn to fix the position of the work. A guide attached to the traveling carriage gives the lateral position of the lock.

METHOD OF OPERATING. By closing the end latch the operator starts the traveling carriage, which will pass over the work until it strikes the adjustable reversing stop and then return to its original position, stopping there automatically. The motion of the carriage can be arrested at any point by means of a hand lever. On No. 1 Groover the rolls clear the material on the return trip, that the operator can remove the finished work.

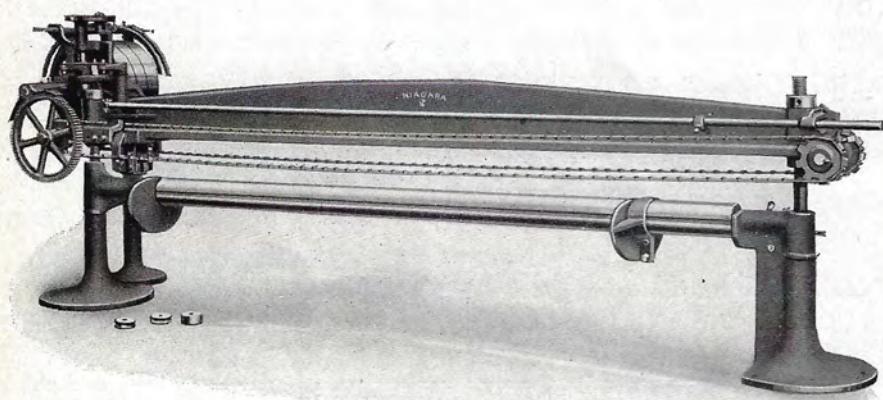
ROLLS. Price includes three grooved rolls,  $\frac{5}{16}$ ,  $\frac{7}{16}$ , and  $\frac{9}{16}$  inch, and two flattening rolls. The width of the seam must be governed by the thickness of material.

POWER GROOVER	No. 1	No. 2	No. 2-A
Will groove and flatten . . . . . inches	36	36	36
Capacity iron up to . . . . . No.	24	20	18
Diameter of horn . . . . . inches	2 $\frac{1}{4}$	3 $\frac{3}{8}$	4 $\frac{1}{2}$
Shipping weight . . . . . lbs.	685	1250	1500
Code word . . . . .	Rebenlaub	Rigato	Rebenstab
Price . . . . .	\$	\$	\$

## Giant Grooving Machines



For Hand



For Power

## Giant Groovers

Capacity No. 20 Iron and Lighter

Intended for grooving and flattening the longitudinal seams of long cylinders, etc. The grooving roll on the carriage acts on the way forward and the flattening roll on the return trip, thereby dividing the strain on the machine. Adjustment is provided for the thickness of material and the tightness of the seam.

SEAM can be grooved towards the outside of the work by turning the flat surface of the horn upward and using a grooved roll on the carriage. For inside seam, flat rolls are applied to the carriage to press the seam into one of the grooves of the horn.

GROOVING MANDREL is pivoted at one end, and the other end can be swung outward to permit putting the work into position and removing it. It is made of heavy steel tubing to avoid undue weight. Two adjustable aprons are provided to fix the position of the work while being grooved, also a guide on the traveling carriage.

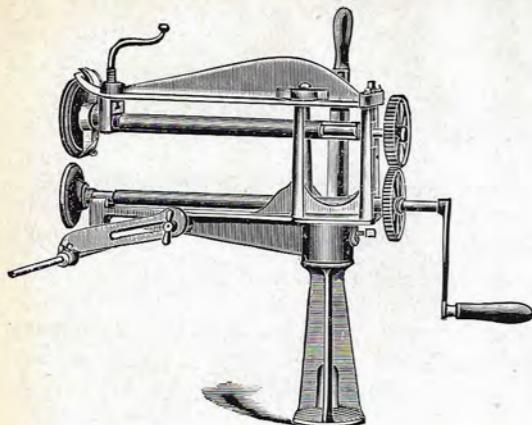
ROLLS. Three grooved rolls,  $\frac{5}{16}$ ,  $\frac{7}{16}$  and  $\frac{9}{16}$  inch, and two flattening rolls are furnished, and grooves of the same width are planed into the horn. The width of the seam must be governed by the thickness of material.

POWER GROOVER is back geared and driven by open and cross belts. The carriage stops automatically at the driving end and reverses automatically at the other end. The position of the reversing stops can be adjusted according to the length of the work.

SPECIAL GROOVERS can be made for square or irregular work, and for round work of smaller diameters, etc. Inquiries should give full particulars.

GIANT GROOVER	Diameter of Horn	Code Word	Shipping Weight	Price
4 feet long, for hand.....	4 inches	Rilas	1200 lbs.	\$
6 feet long, for hand.....	4 inches	Reblatt	1375 lbs.	\$
8 feet long, for hand.....	5 inches	Rebles	1700 lbs.	\$
10 feet long, for hand.....	5 $\frac{5}{8}$ inches	Rebloom	1800 lbs.	\$
4 feet long, for power .....	4 inches	Rileg	1900 lbs.	\$
6 feet long, for power .....	4 inches	Rebonade	2150 lbs.	\$
8 feet long, for power .....	5 inches	Reboneter	2400 lbs.	\$
10 feet long, for power .....	5 $\frac{5}{8}$ inches	Rebomar	2700 lbs.	\$

## Moore's Double Seamer



Many sheet metal workers prefer this type of Seamer for general use. The trolley wheel on the upper face lays the seam partly over. The upper shaft and face are then shifted laterally to complete the double seam. No extra discs are required for various diameters.

MOORE'S DOUBLE SEAMER	No. 1	No. 2	No. 3	No. 4
Capacity..... No.	26	26	28	26
Depth of throat ..... inches	15	13	10	29
Diameter of lower face ..... inches	4 1/2	4	3	3 1/2
Code word .....	Reck	Reclam	Reclang	Repack
Shipping weight..... lbs.	100	75	65	330
Price .....	\$21.00	\$19.00	\$16.00	\$70.00

## Hulbert's Double Seamer

For No. 26 Iron and Lighter

Will double seam flaring and straight work, coffee pots, oval and round boilers, etc.

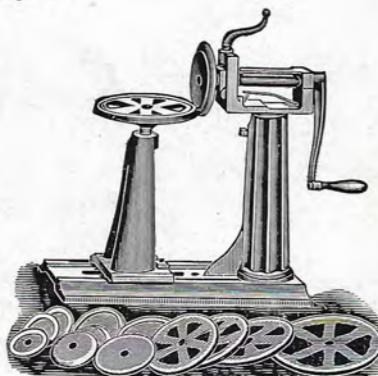
DEFLECTOR offsets and stiffens the bottom, after seaming or soldering.

PRICE includes ten discs and three faces—

Flaring discs, 4 1/8, 6 1/4, 7 1/8, 8 7/8, 11 1/2 inches diameter.

Straight discs, 4 1/4, 5 3/4, 8 1/8, 10 1/4 inches diameter.

Oval edge disc, 5 7/8 inches diameter.



HULBERT'S DOUBLE SEAMER	Code Word	Shipping Weight	Price
14 inches, with deflector.....	Reclinar	125 lbs.	\$27.00
14 inches, without deflector.....	Recludo	120 lbs.	25.00
20 inches, with deflector.....	Recoast	190 lbs.	35.00

## Heavy Hulbert's Double Seamer



For No. 22 Iron and Lighter

Owing to its substantial construction, this Seamer will answer for comparatively heavy material.

**DISCS.** Price includes one disc, 12 inch diameter. Discs of special sizes can be furnished at proper extra charge. A seaming disc of approximately the same diameter as the work facilitates the job.

**HEIGHT.** To make the full working height available, the work must be not less than 13 inches diameter.

**POWER ATTACHMENT**, with Clutch, to control the motion, can be provided.

	Code Word	Shipping Weight	Price
25 inch Heavy Hulbert's Double Seamer .....	Recoil	435 lbs.	\$ 50.00
36 inch Heavy Hulbert's Double Seamer .....	Recolar	525 lbs.	60.00
Power Attachment, with Clutch, extra.....			30.00

For light material an extra upper face should be used.

## Hulbert's Double Seamer for Square Work



For No. 26 Iron and Lighter

It works on the same principle as other Hulbert's Seamers. The Double Seamer Head moves on a slide while its rotary face acts upon the seam.

The parallel sides are usually seamed first, one at a time, then the position of the horizontal disc is changed for the other sides. A stop with index determines the proper positions.

Suitable for bottom seam not to exceed 22 inches in length. Longer seams can be completed in sections by moving the work laterally after seaming it partly.

Seaming discs are charged for extra according to dimensions. Inquiries should give full particulars.

	Code Word	Shipping Weight	Price
25 inch Hulbert's Double Seamer for square work, not including seaming discs.....	Recomar	500 lbs.	\$

## Niagara Turret Double Seamer—Patented



Cut shows Seamer with Work Support

This machine can be particularly recommended for seaming flat bottoms of tanks, drums, etc., made of material No. 18 to 24 gauge. A tight and uniform seam is produced. The bottom and body flanges must be sharp and of uniform width. A preceding setting down operation is not required, except on light stock.

The work rests on the horizontal seaming disc. The double seaming head carries three rolls, driven by gears, which are successively brought in contact with the seam, until it is completed.

**WORK SUPPORT.** When the seaming disc is not sufficiently large to hold the work in the proper position, it must be supported in some other manner. For medium size work we can furnish the work support shown in the illustration, at extra charge. Large bodies should be supported on the lower edge, for which the users should make suitable provision.

**DISCS.** Price includes a seaming disc, 12 inches diameter, suitable for all work larger than this size. For work 9 to 12 inches diameter, an extra seaming disc can be furnished.

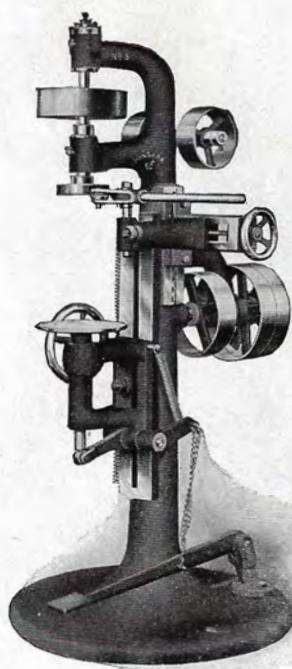
**ROLLS.** Regular rolls are fitted for Nos. 18 to 22 gauge. Extra set of rolls is required for No. 24 to 26 gauge.

**CLUTCH** can be applied to control the motion, instead of T and L Pulleys.

	Code Word	Shipping Weight	Price
36 inch Turret Double Seamer .....	Rightwise	1800 lbs.	\$
48 inch Turret Double Seamer .....	Rigidly	2000 lbs.	\$
Clutch and Pulley, instead of T and L Pulleys, extra .....			\$
Work Support, extra .....			\$

**OVAL WORK** can be seamed to better advantage, particularly if the material is rather light, by using special sliding discs, shaped to conform with the work.

## Niagara Power Double Seamers Nos. 1 to 4



No. 3

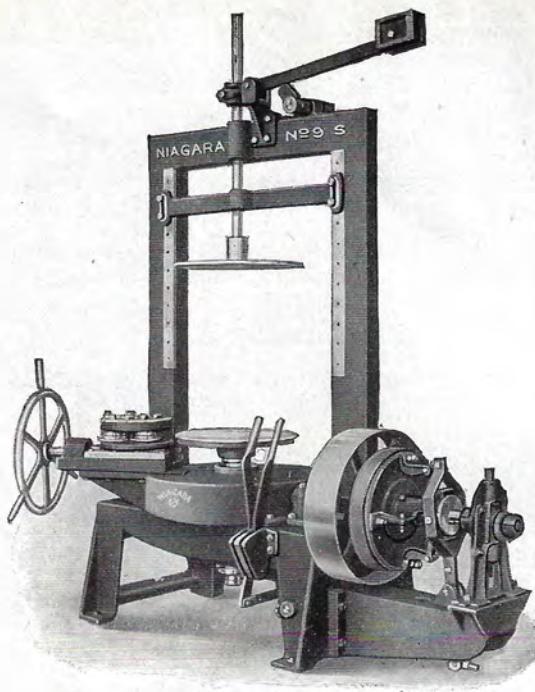
Intended for double seaming the tops and bottoms of round articles of sheet metal, either straight or flaring. The work can be rapidly and perfectly double seamed by unskilled labor. The tops and bottoms to be double seamed must be stamped by means of press and die with a depression close to the seam. The lower spindle has anti-friction bearing.

On Nos. 3 and 4, the adjustment to suit the height of the article can be made by means of a rack and pinion, as well as on the bracket carrying the seamer rolls.

NIAGARA POWER DOUBLE SEAMERS	No. 1	No. 2	No. 3	No. 4
For work in diameter up to.....inches	6	9	15	20
For work in height up to.....inches	6	10	16	27
Size of T and L Pulleys .....	6x2	7x3	9½x3	12x3¾
Speed of spindle .....	R. P. M.			
800-1000	700-800	500-700		180-500
Sizes of stepcone .....	inches			8-10-12
Size T and L Pulleys on countershaft	inches			12x3¾
Speed of countershaft.....	R. P. M.			300
Shipping weight .....	lbs.	275	550	900
Price with T and L Pulleys, no chucks .....	\$	\$	\$	\$
Code word .....	Ridonar	Ridosso	Riechen	Riedesee
Stepcone pulleys and countershaft .....				\$

Seamer chucks are charged for extra according to the size and shape of the work.

## Heavy Power Double Seamer



Intended for double seaming the heads or bottoms of steel barrels, drums, ash cans, wash tubs, etc. The work must be stamped with a depression close to the seam and the bodies are flanged prior to seaming.

The motion of the machine is controlled by a friction clutch, actuated by hand lever. The controlling levers are grouped in convenient position for the operator.

The seaming roll turret is mounted on a slide and the rolls are brought in contact with the work by means of screw and hand wheel. On No. 10 Seamer two speeds are provided for actuating the screw, for heavier and lighter material.

Extra seaming rolls are required when the stock to be double seamed varies materially in thickness.

Should it be desired to use a Double Seamer for a variety of diameters, it is advisable to provide for two driving speeds by means of step-cone pulley and countershaft.

HEAVY POWER DOUBLE SEAMERS		Nos. 9-S	10
For material up to .....	No.	16	12
With regular slide, for work in diam. from.....inches	10 to 32	12 to 32	
For work in height from.....inches	6 to 44	6 to 44	
Floor space R-L, F-B, .....inches	90 x 42	106 x 48	
Weight about .....lbs.	4200	6000	
Price, not including chucks .....	\$	\$	
Stepcone pulley and countershaft, extra .....	\$	\$	

Seamer chucks are required and charged for extra according to size and shape of work.

## Forming Rolls

Intended for forming sheet metal into cylindrical shape. The capacity depends upon the diameter and length of the rolls. Other lengths besides those listed in the Catalog can be furnished.

ROLLS are made of steel, nicely finished. The gears are of steel.

T AND L PULLEYS can be applied to rolls 2 inches diameter and larger.

IRON LEGS can be furnished for the smaller machines where the list prices do not include them.

WIRE GROOVES are provided on all our Plain and Slip Roll Formers,  $1\frac{1}{2}$  inch diameter and larger. They permit forming sheets with wired edges and wire rings. The grooves on the right hand end of the lower front roll and forming roll are used when the wire is to be towards the outside of the cylinder, and the grooves on the left hand end of the top roll are for inside wire.

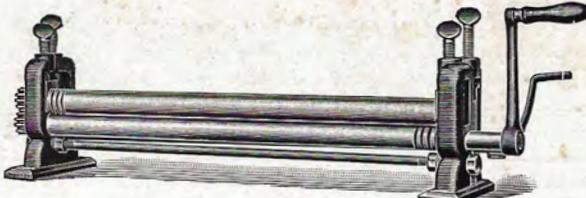
### Plain Forming Rolls



The upper roll is adjustable for the thickness of material, and the forming roll according to the diameter to be formed.

PLAIN FORMING ROLLS	Code Word	Shipping Weight	Price
1 $\frac{1}{2}$ x 16 inches.....	Rebora	62 lbs.	\$9.00
1 $\frac{1}{2}$ x 20 inches.....	Rebosa	70 lbs.	10.00
1 $\frac{3}{4}$ x 30 inches.....	Rebours	110 lbs.	18.00
2 x 30 inches.....	Rebozo	130 lbs.	19.00
2 x 37 inches.....	Rebraco	150 lbs.	22.00
2 x 42 inches.....	Rebramar	170 lbs.	24.00
2 $\frac{1}{2}$ x 30 inches.....	Rebsieb	225 lbs.	38.00
2 $\frac{1}{2}$ x 37 inches.....	Rebstock	250 lbs.	43.00
2 $\frac{1}{2}$ x 42 inches.....	Rebuff	275 lbs.	48.00
Iron Legs, extra .....			8.00
T and L Pulleys, extra .....			10.00

### Oval Forming Rolls, O'Brien's Patent

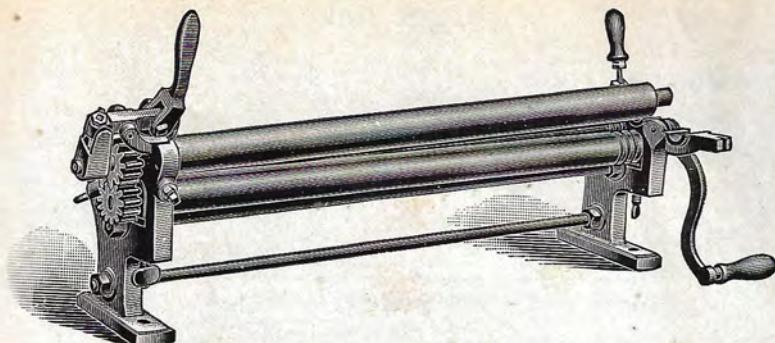


Oval or oblong cylinders can be formed in convenient manner, also round work.

The bearings of the forming roll rest on eccentrics which hold the roll in the upper position while forming the end curves of oval cylinders, and they are dropped to a lower position when forming the sides. The two eccentrics are connected by a rod with handle.

	Code Word	Shipping Weight	Price
2 x 30 inch Oval Forming Rolls, O'Brien's Patent.....	Rigent	145 lbs.	\$25.00

## Slip Roll Stove and Tin Pipe Formers

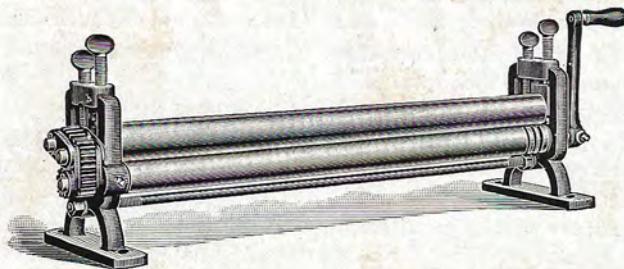


Made with simple and quick-acting device for lifting the one end of the upper roll and holding it suspended while the work formed around it is being removed.

### SLIP ROLL FORMERS

	Code Word	Shipping Weight	Price
xx 12 inches .....	Rebujal	40 lbs.	\$12.00
xx 16 inches .....	Rebutir	50 lbs.	16.00
xx 16 inches .....	Recaba	70 lbs.	10.00
xx 20 inches .....	Recalcar	75 lbs.	11.00
xx 30 inches .....	Recall	130 lbs.	19.00
xx 30 inches .....	Recambio	150 lbs.	20.00
xx 37 inches .....	Recanted	170 lbs.	24.00
xx 42 inches .....	Recantat	190 lbs.	27.00
Iron Legs, extra .....			8.00
and L Pulleys, extra .....			10.00

## Forming Rolls with Compensating Gears

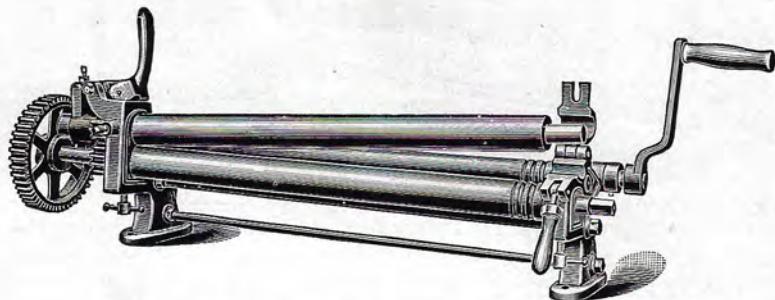


Intermediate gears are used between the gears on the roll ends, that the proper mesh is maintained irrespective of the space between the rolls, no matter if they are set close together or further apart. This feature permits of greater variation in the space between the rolls.

### FORMING ROLLS WITH COMPENSATING GEARS

	Code Word	Shipping Weight	Price
xx 20 inches, Plain .....	Recado	75 lbs.	\$11.00
xx 30 inches, Plain .....	Recalvos	115 lbs.	19.00
xx 30 inches, Plain .....	Recama	135 lbs.	20.00
xx 37 inches, Plain .....	Recalzes	155 lbs.	24.00
xx 20 inches, Slip .....	Recaldis	80 lbs.	12.00
xx 30 inches, Slip .....	Recaptor	135 lbs.	20.00
xx 30 inches, Slip .....	Recata	155 lbs.	21.00
xx 37 inches, Slip .....	Recaudo	175 lbs.	25.00

## Niagara Slip Roll Forming Machine with Lifting Device for Upper Roll



3 x 36 inch, Single Back Geared, for Hand and Bench

These Machines are well made and of substantial construction. The rolls are of steel and have wire grooves.

LIFTING DEVICE is provided for raising the one end of the upper roll and holding it suspended while the work formed around it is being removed.

2½, 3 AND 3½ INCH ROLLS. An eccentric lever is used to raise the opposite end of the upper roll, as shown in the illustration of 3 inch Slip Rolls.

4 AND 4½ INCH ROLLS. The upper roll is lifted by making a half turn with the handle on right hand side, as shown in cut of 4 inch rolls.

5 AND 6 INCH ROLLS. Have the raising lever on the left hand side, as shown in cut of 6 inch rolls.

GEARING. Single or double back gearing can be applied to facilitate the work. When hand driven, single back geared rolls can be run direct, and double back geared machines can be driven from the first gear shaft.

FORMING ROLL is adjustable by screws and on the larger machines sprocket wheel and chain are applied for simultaneous adjustment of both ends.

On the regular machines the rear or forming roll is not driven by gears, but, if ordered, a set of three gears can be provided to drive the rear roll from the lower roll. It is then possible to feed the material without setting the front rolls quite so tight together.

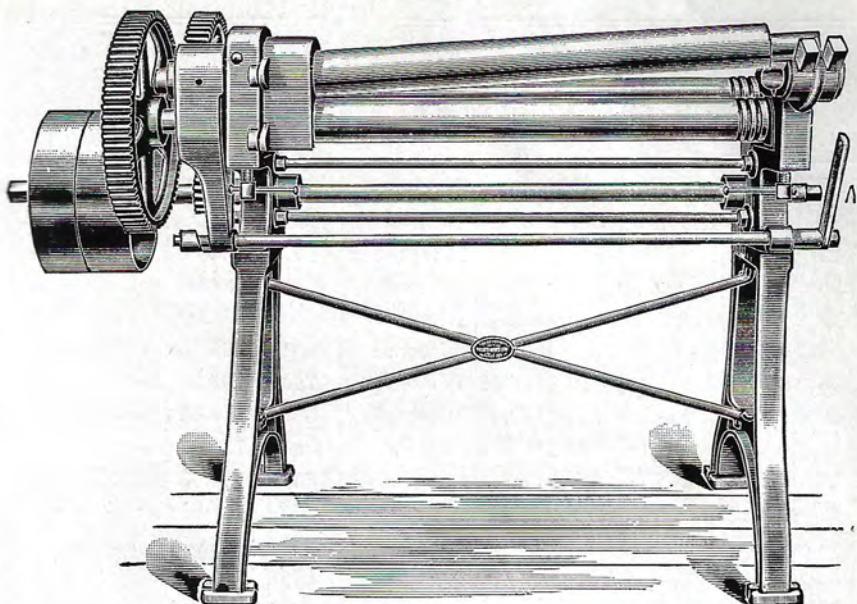
BEVEL GEARS for simultaneous adjustment of both ends of forming rolls or lower front roll are sometimes provided, at extra charge.

REVERSING DRIVE can be arranged for, which enables the operator to change the direction in which the rolls revolve. The material can be run forward and back between the rolls while forming it gradually to the desired diameter.

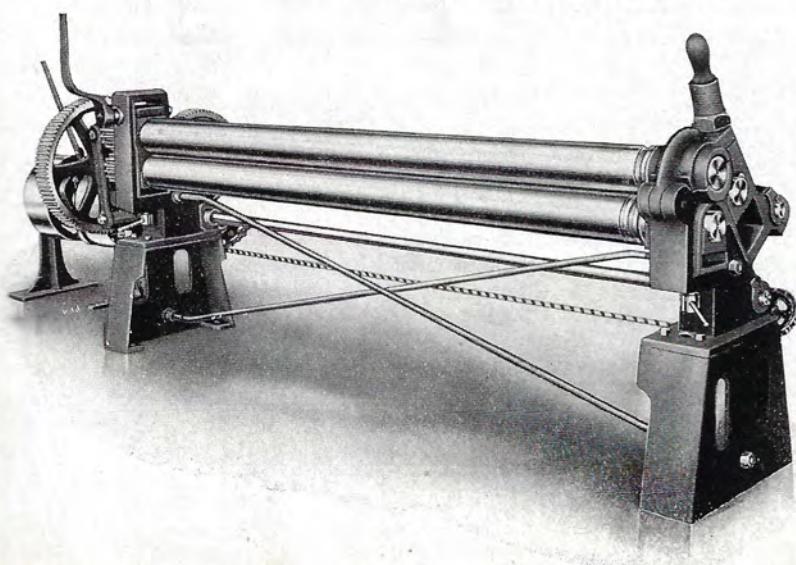
Double Friction Clutch Pulleys are used for this purpose on larger machines and on 3 to 4 inch Rolls a positive clutch, actuated by hand lever, between pulleys is sometimes applied.

MOTOR DRIVE. Our Forming Roll can be furnished for direct drive from an electric motor.

## Niagara Slip Roll Forming Machines



4 x 42 inch, Double Back Geared, with T and L Pulleys



6 x 120 inch, Double Back Geared, with Double Friction Clutch

**Niagara Slip Roll Forming Machines with Lifting Device  
for Upper Roll**

		PLAIN For Hand & Bench		SINGLE BACK GEARED For Hand & Bench			DOUBLE BACK GEARED For Hand, 3 and 3½ in.; for Bench, 4 to 6 in. on Legs.			
Diam. in.	Length in.	Price	Code Word	Sh. Wt. Lbs.	Price	Code Word	Sh. Wt.	Price	Code Word	Capacity
2½	30	\$40.00	Rimareco	330	\$47.00	Rimbot	.....	.....	.....	.....
	36	44.50	Rimator	360	51.50	Rimena	.....	.....	.....	.....
	42	49.00	Rimbast	390	56.00	Rimer	.....	.....	.....	.....
3	36	.....	.....	475	75.00	Rimmon	515	\$ 84.00	Rimpolp	No. 14
	42	.....	.....	520	81.00	Rimolest	560	90.00	Rimunita	No. 15
	48	.....	.....	565	87.00	Rimondi	605	96.00	Rimutar	No. 16
3½	36	.....	.....	700	95.00	Rimonto	760	105.00	Rinanto	No. 12
	42	.....	.....	760	102.50	Rimpania	820	112.50	Rinaria	No. 13
	48	.....	.....	820	110.00	Rimpello	880	120.00	Rincage	No. 14
4	36	.....	.....	.....	.....	.....	1500	165.00	Rincaro	No. 10
	42	.....	.....	.....	.....	.....	1575	175.00	Rinchite	No. 11
	48	.....	.....	.....	.....	.....	1650	185.00	Rincolpo	No. 12
	54	.....	.....	.....	.....	.....	1725	195.00	Rincora	No. 13
4½	36	.....	.....	.....	.....	.....	1650	185.00	Rincoto	No. 8
	42	.....	.....	.....	.....	.....	1750	197.00	Rineuler	No. 9
	48	.....	.....	.....	.....	.....	1950	210.00	Rindenlos	No. 10
	54	.....	.....	.....	.....	.....	2050	220.00	Rineras	No. 11
5	36	.....	.....	.....	.....	.....	1950	240.00	Rineron	No. 6
	42	.....	.....	.....	.....	.....	2070	255.00	Rinformo	No. 7
	48	.....	.....	.....	.....	.....	2200	270.00	Rinfreno	No. 8
	54	.....	.....	.....	.....	.....	2325	285.00	Ringario	No. 9
6	36	.....	.....	.....	.....	.....	3000	330.00	Ringbord	3/8 in.
	42	.....	.....	.....	.....	.....	3175	350.00	Ringbout	5/16 in.
	48	.....	.....	.....	.....	.....	3350	370.00	Ringent	9/32 in.
	54	.....	.....	.....	.....	.....	3500	390.00	Ringlead	1/4 in.

LONGER AND HEAVIER ROLLS will be quoted on application, giving particulars.

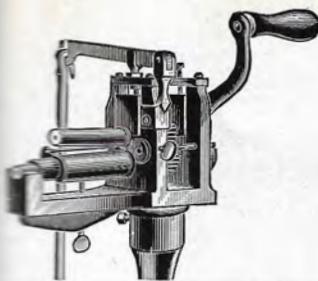
CAPACITY. 2½ to 3½ inch single back geared Rolls will form No. 16 easily.

Rolls 3 inch and larger in diameter should be double back geared, that the operator can use them to the full capacity.

**Extras**

	2½" Rolls	3" Rolls	3½" Rolls	4" Rolls	4½" Rolls	5" Rolls	6" Rolls
T and L Pulleys, extra .....	\$7.50	\$ 9.00	\$10.00	\$12.00	\$12.00	\$14.00	\$16.00
Positive Reversing Clutch, extra .....	.....	55.00	55.00	55.00	.....	.....	.....
Double Friction Clutch .....	.....	.....	.....	90.00	90.00	105.00	110.00
Compensating Gears, for feed roll .....	4.50	6.50	7.50	10.00	12.50	18.00	22.00
Forming Roll, gear driven .....	4.50	6.50	7.50	10.00	12.50	18.00	22.00
Iron Legs .....	7.50	9.00	10.00	.....	.....	.....	.....

## Tube Forming Rolls



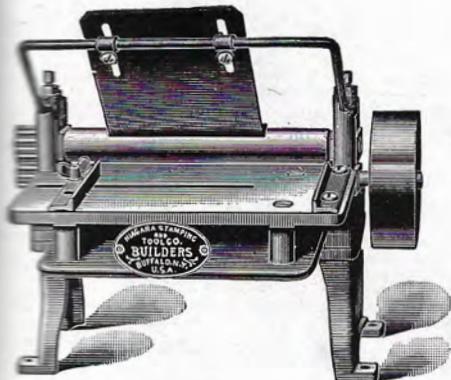
Intended for forming short tubes of light material, not less than  $\frac{1}{8}$  inch diameter. The rolls are made of steel, and a treadle attachment is used for the upper roll. A small bead can be pressed near the end of the tubes while forming them.

No. 1 for work up to 5 inches long.

No. 2 for work up to  $6\frac{1}{2}$  inches long.

	Code Word	Shipping Weight	Price
No. 1 Tube Forming Rolls.....	Ravage	45 lbs.	\$20.00
No. 2 Tube Forming Rolls.....	Ravener	60 lbs.	25.00

## Power Forming Rolls



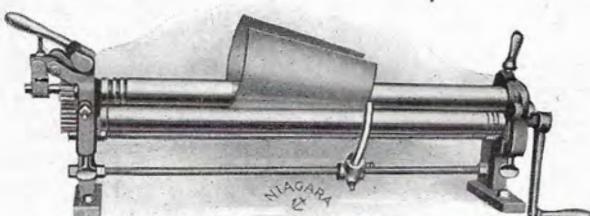
For forming round can bodies, etc. The rolls and forming piece are made of steel. The gears are machine cut and the upper bearings are of bronze metal.

RUBBER COVERED ROLLS are useful for forming blanks with the edges folded previously.

KNOCKOFF ATTACHMENT prevents the work from forming around the upper roll. The bodies drop out of the way, without being removed by the operator.

For taper work, special gauges are required, at extra cost.

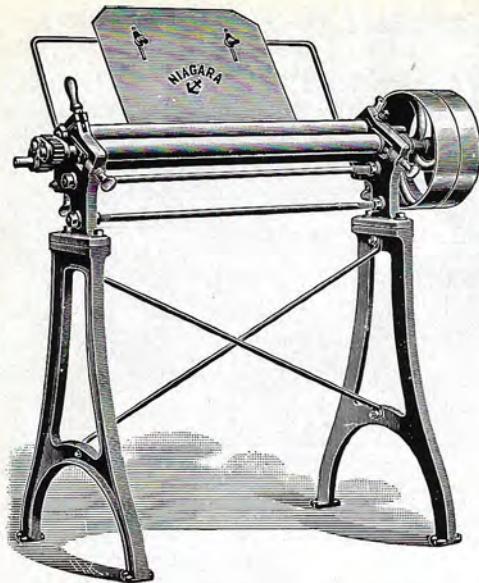
POWER FORMING ROLLS	Code Word	Shipping Weight	Price
1 x 8 inch steel rolls .....	Recision	50 lbs.	\$38.00
1 x 12 inch steel rolls .....	Recitative	125 lbs.	38.00
1 x 12 inch rubber covered.....	Reckless	120 lbs.	42.00
1 x 20 inch steel rolls .....	Recitir	140 lbs.	42.00



## Taper Attachment to Forming Rolls

This Attachment retards taper work on the narrow end, while the larger end feeds more rapidly. It can be applied to forming rolls where the three rolls are geared together. The concave side of the blank bears against the attachment.

## No. 2 Power Forming Rolls



The three rolls are driven by gears. It is not necessary to set the front rolls tight together to feed the stock, and material can be formed with edges folded previously.

KNOCKOFF ATTACHMENT prevents the material from forming around the upper roll.

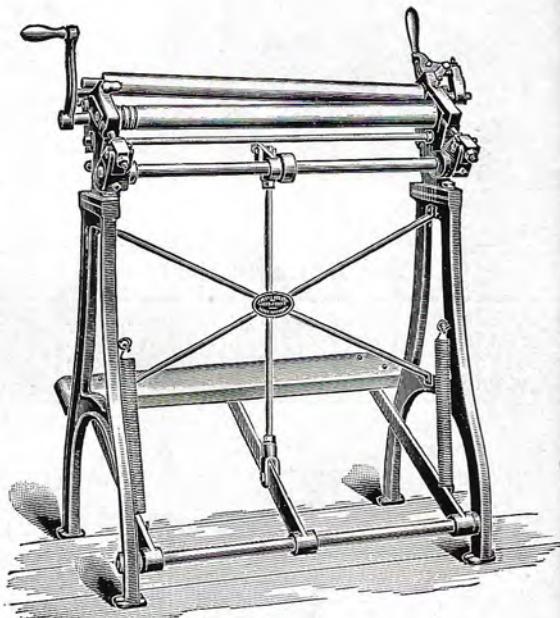
	Code Word	Shipping Weight	Price
No. 2, 2 x 30 inches, Power Forming Rolls . . . .	Reckling	280 lbs.	\$45.00

### Slip Roll Former for Oval Work

Adapted to forming oval, oblong and round cylinders.

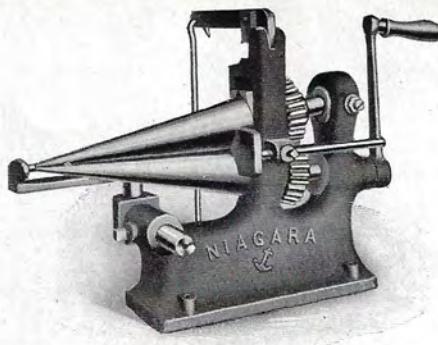
The forming roll can be raised and lowered by means of foot treadle attachment to the required positions fixed by adjustable stops.

The upper roll has lifting device by means of which its one end can be raised and held suspended while the work is being removed.



SLIP ROLLS FOR OVAL WORK	Code Word	Shipping Weight	Price
2 x 30 inches, not geared . . . . .	Recipero	325 lbs.	\$35.00
2½ x 36 inches, not geared . . . . .	Recipient	525 lbs.	65.00
3 x 36 inches, single back geared . . . . .	Recipro	700 lbs.	105.00

## Funnel Former



Intended for forming conical and taper work, such as funnels, can tops, lamp shades, etc. No. 1 has rolls 10 inches long,  $\frac{1}{8}$  inch diameter at small end,  $2\frac{1}{2}$  inches at the large end.

The upper roll is actuated by treadle attachment.

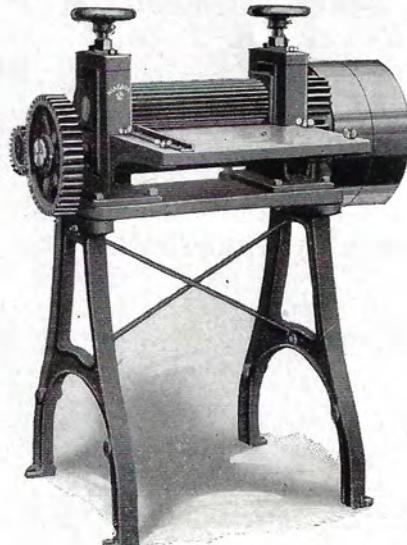
No. 24 gauge can be formed, small end not less than 1 inch, large end not less than 4 inches diameter. On light material the small end can be formed about  $\frac{1}{2}$  inch and the large end  $3\frac{1}{2}$  inches diameter.

No. 2 is an extra heavy machine, suitable for No. 18 iron and lighter. It has crank screw for the upper roll.

Rolls 10 inches long, 1 inch diameter at the small end, 4 inches diameter at the large end.

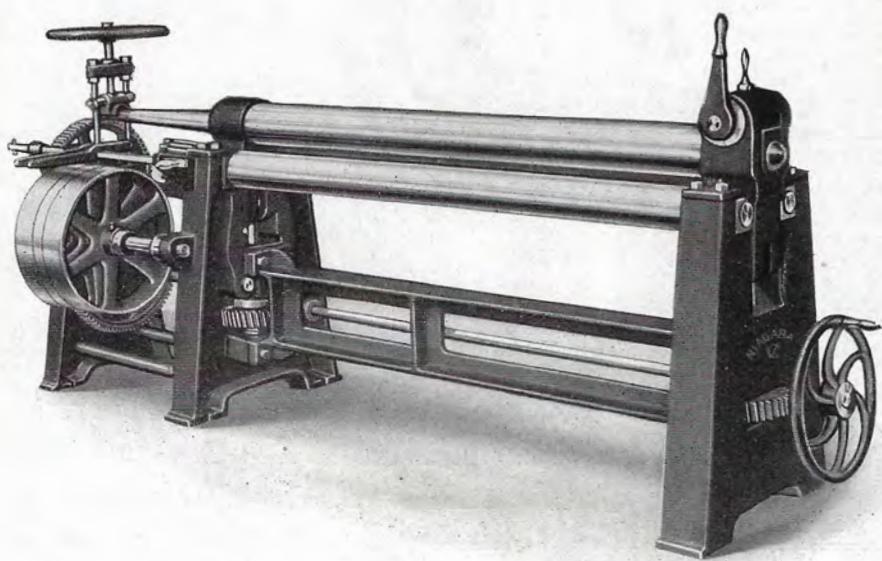
	Code Word	Shipping Weight	Price
No. 1 Funnel Former, for hand.....	Recinera	90 lbs.	\$40.00
No. 2 Funnel Former, for hand.....	Recinito	500 lbs.	125.00
T Pulley to No. 1, extra.....			4.00
T and L Pulleys to No. 2, extra.....			10.00

## Corrugating Rolls



Machines of this kind are used for corrugating sheet metal. The prices depend on the length of the rolls, size and shape of corrugations, thickness and kind of material to be operated upon, etc. Inquiries should give full particulars.

## Plate Bending Rolls



The forming roll of these machines is located over and between the other two rolls. The forming roll is adjusted for the thickness of material and the desired curve. The two lower rolls are driven and remain in fixed positions, consequently the mesh of the gears is not disturbed. The material can be fed into the machine from either side.

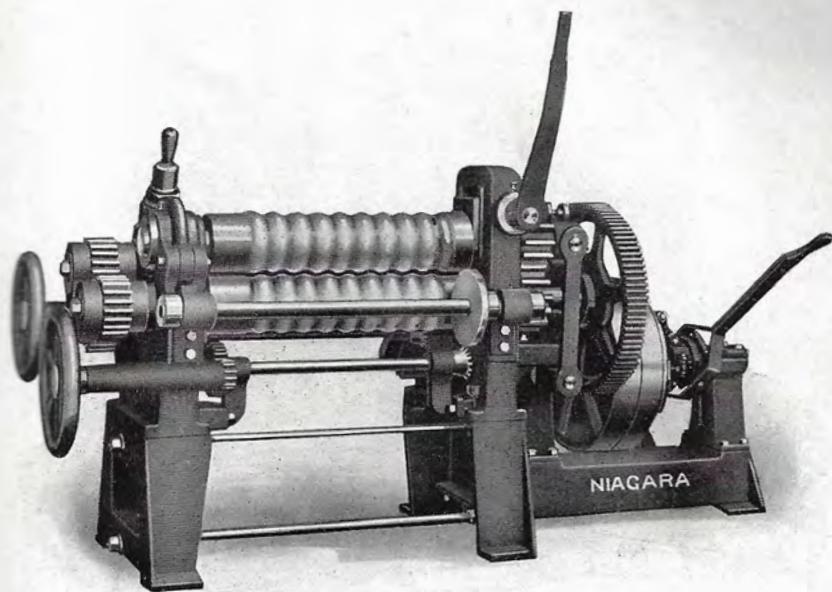
The one bearing of the upper roll can be swung downward to permit raising the end of the upper roll and holding it suspended while removing the work.

The machines are double back geared and provided with reversing belt drive and out-board bearing. They are particularly intended for fairly heavy stock.

Diameter of upper steel roll .....	5½ inches
Diameter of lower steel rolls .....	4½ inches
Size of T and L Pulleys .....	18x4x2x4 inches
Speed of pulleys .....	250 R. P. M.
Ratio of gearing .....	1:16

PLATE BENDING ROLLS	Length	60 inches	72 inches
Capacity .....		No. 10	No. 12
Shipping weight .....		3150 lbs.	3350 lbs.
Code word .....		Recinch	Recimolo
Price .....		\$	\$

## Corrugated Curving Rolls



This machine is intended for forming corrugated sheets into cylindrical shape, for culverts, etc.

**FRAMES** are of substantial design and mounted on iron legs.

**ROLLS.** We recommend rolls forged of solid steel, which are a great deal more rigid and durable than rolls made of cast iron mounted on shafts.

**LIFTING DEVICE** is provided for the upper roll, enabling the operator to raise the one end, which is held suspended while the work is being removed. The left hand housing has a quick-releasing hinged cap for the upper roll.

**ADJUSTMENT** of the lower front roll and of the back roll is made uniformly on both ends by means of bevel gears, carried on a shaft and actuated by hand wheels.

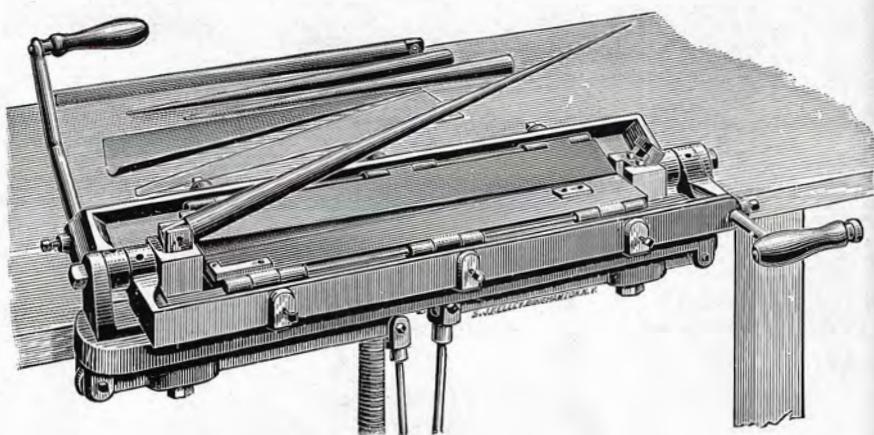
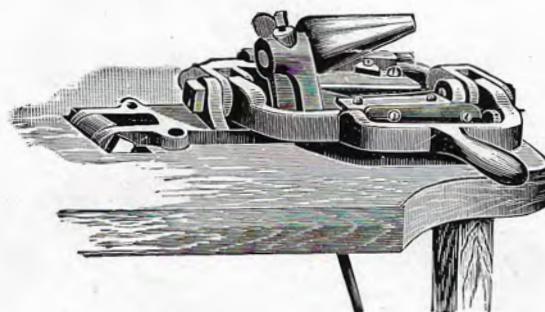
**GEARING.** The three rolls are driven by gears machine cut of solid steel. There is an intermediate gear between those connecting the lower and back rolls. The back gears are of cast iron and machine cut.

**FRICITION CLUTCH** controlled by hand lever, enables the operator to stop the motion quickly without throwing off the belt. If desired, double friction clutch can be provided, at extra charge, to permit revolving the rolls in either direction.

Price is governed by the desired length of rolls. Inquiries should give width and extreme thickness of material, size of corrugations and other particulars.

Outside diameter of rolls, about .....	inches	7½
Diameter of rolls in bearing .....	inches	3½
Ratio of gearing .....		1:17
Size of pulleys .....	inches	24 x 6
Shipping weight .....	.lbs.	4500

## Niagara Tube Formers



These machines are made for forming straight or taper tubes of light sheet metal, with lap joint or lock seam.

By depressing the foot treadle, the forming mandrel forces the material into the die bed and the rounding is then completed by means of the two side wings, which are pivoted at the ends. The edges of the wings follow the curvature of the mandrel.

Mandrel and die bed must be shaped to conform with the size and shape of the tube.

In forming tubes where the mandrel cannot be made strong enough, on account of the small diameter of the tubes, the material is first formed into "U" shape by means of a breaker, and the tube is then completed over a suitable mandrel.

The hooks of lock seamed tubes must be folded previously and the seam is closed afterwards.

INQUIRIES should state the inside diameters of the tubes, lengths, thickness and kind of material to be used, and if there will be a lock or lap seam.

## Former for Lock Seam Tubes



Can be arranged for forming tubes from 1 to  $2\frac{1}{2}$  inches diameter of No. 26 gauge and lighter. We can furnish similar machines for longer and shorter tubes.

One of the edges, turned previously, is hooked into the forming mandrel, and the material is formed around the mandrel by making one turn with the crank handle. The holdown, actuated by foot treadle, presses upon the material and the hooks snap into one another. The forming mandrel is pivoted in the frame at the one end, that the operator can swing the other end outward to remove the work.

The hooks for the lock seam can be from  $\frac{3}{16}$  to  $\frac{1}{4}$  inch wide.

**MANDREL** is required for each diameter and to suit the thickness and kind of material used.

**INQUIRIES** should state the length and inside diameter of the tube, thickness and kind of material, and width of seam.

	Code Word	Price
30 inch Former for lock seam tubes with 1 inch mandrel.....	Rienfo	\$

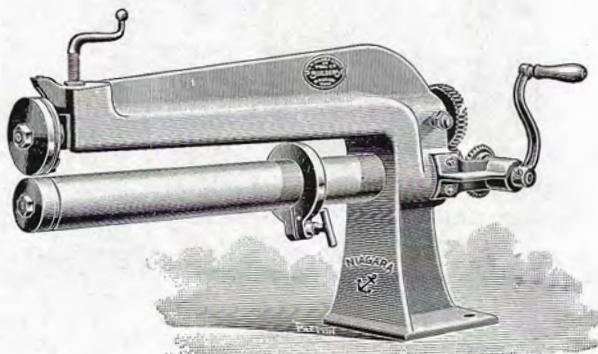


## Niagara Patent Tube Former

This machine can be arranged for forming tubes with lap seam of comparatively small diameter up to 36 inches long. A set of dies is required for each diameter and inquiries should give full particulars of the requirements:

Diameter of tubes  
Length of tubes  
Thickness of material  
Kind of material, etc.

## Machines for Seaming Round Furnace Pipe



28 Inch Furnace Pipe Seamer

We are in position to furnish a set of machines for double seaming the circular joints of round furnace pipe made of light material. The seam produced is perfect in tightness and appearance.

Superior Large Burrng Machine is used for burring the one end of a length of pipe.

No. 2 Double Edge Turner, which is similar to our Buffalo Elbow Edger, prepares the end of the other section of pipe.

Furnace Pipe Seaming Machine compresses the seam, turns it over, grooves and flattens it, without exchange of faces.

Extension to lower shaft with guide roll is furnished with Furnace Pipe Seamers to support the outer section of pipe.

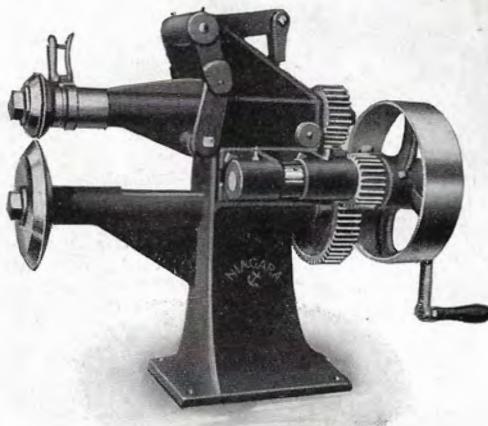
For manufacturing purposes we recommend our Power Bench Machines for burring and double edging.

	Code Word	Shipping Weight	Price
No. 2 Double Edge Turner.....	Reconfirm	36 lbs.	\$12.50
20 inch Furnace Pipe Seamer.....	Reconsole	175 lbs.	40.00
28 inch Furnace Pipe Seamer.....	Recontar	340 lbs.	70.00
T Pulley to 20 inch Seamer, extra.....			4.00
Jaw Clutch and L Pulley to 28 inch Seamer, extra.....			30.00
Treadle Attachment to No. 2 Double Edge Turner, extra.....			4.00

### Beaded Joint for Round Furnace Pipe

Instead of double seaming, two sections of round furnace pipe are sometimes joined by beading the two pipe ends. The rolls are usually made for two single beads  $\frac{3}{16}$  inch wide, 1 inch apart from center to center, and they can be applied to the Furnace Pipe Seamer or to the Deep Throat Beader.

## Elbow Seam Closing Machines



Large Seam Closer with Pulley

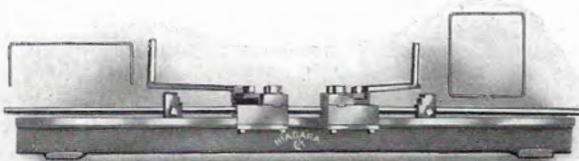
Intended to close and tighten the circular seam of pieced elbows, after the edges are prepared with Burrning Machine and Double Edge Turner, which must be equipped with special gauges for elbow work. The faces are made in halves, for tight and loose seams. Treadle Attachment actuates the upper shaft.

**NO. 4 SEAM CLOSER** is suitable for elbows from  $3\frac{1}{2}$  to 7 inches diameter. Depth of throat 9 inches.

**LARGE SEAM CLOSER**, with regular faces, answers for elbows from  $7\frac{1}{2}$  to 12 inches diameter. Depth of throat  $15\frac{1}{2}$  inches. Special faces can be furnished for elbows of smaller diameter.

	Capacity	Code Word	Shipping Weight	Price
No. 4 Elbow Seam Closer.....	No. 26	Recoul	95 lbs.	\$28.00
Large Elbow Seam Closer .....	No. 24	Recouch	175 lbs.	60.00
T Pulley to No. 4 Closer, extra.....				3.00
T Pulley to Large Closer, extra .....				4.00

## Niagara Wire Frame Bender



Intended for bending wire frames to be inserted in the top edges of drip pans and similar work. Two bends are made at the same time, and the distance between these bends can be varied from 6 to 45 inches.

The Bender is suitable for wire up to  $\frac{1}{4}$  inch diameter and to special order it may be arranged for flat stock.

	Code Word	Shipping Weight	Price
Niagara Wire Frame Bender .....	Riegel	140 lbs.	\$55.00

## Curved Shears and Knives



For Foot

Curved Shears are especially designed to accommodate curved knives fastened to cast iron blocks, for cutting the sections of stove pipe elbows and other irregular shapes. They are made either for belt or foot power.

Knives for this work are preferable to dies, as it is easier to keep them in order and on account of the difference in price.

The cross head has long guides and end gibbs. The cutter bar works as accurately as the slide of a press.

**POWER CURVED SHEARS.** The motion is controlled by a positive clutch, which causes the cutter bar to descend after depressing the foot treadle and to stop on returning to the highest position, unless the treadle is kept depressed.

**CAPACITY.** Foot Shears No. 22; Power Shears No. 20 iron and lighter.

**PRICE** includes a set of front, back, bevel and side gauges, but no knives.

CURVED SHEARS—LENGTH	25 inches	30 inches	36 inches	42 inches	52 inches	62 inches
For elbows in diameter up to . . . inches	7	9	10	12	15	16
Foot Curved Shears . . . . .	\$	\$	\$	\$		
Shipping Weight . . . . . lbs.	540	700	900	1150		
Power Curved Shears . . . . .	\$	\$	\$	\$	\$	\$
Shipping Weight . . . . . lbs.	900	1200	1350	1700	1900	2100

## Curved Knives and Blocks

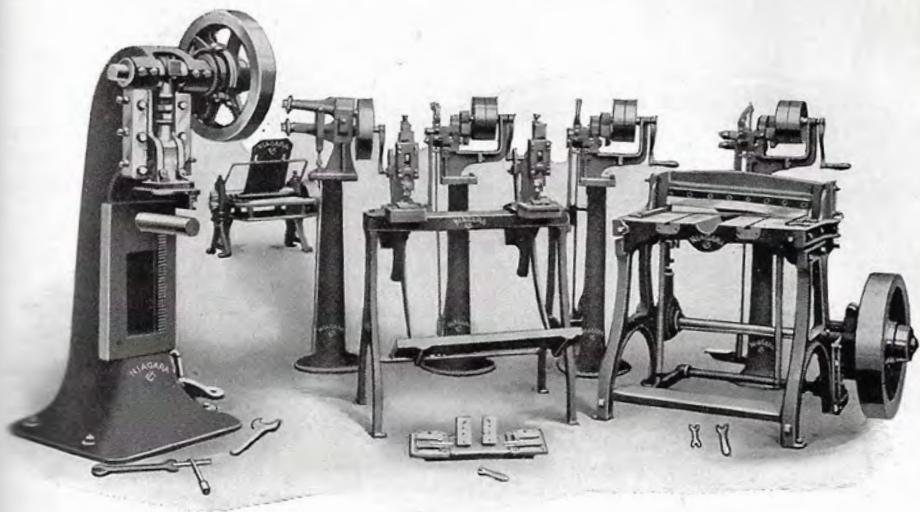
For elbows . . . . .	2 inch \$24.00	3 inch \$27.00	4 inch \$32.00	5 inch \$36.00	6 inch \$40.00	7 inch \$42.00	8 inch \$45.00
For elbows . . . . .	9 inch \$50.00	10 inch \$55.00	11 inch \$62.00	12 inch \$70.00	14 inch \$85.00	16 inch \$100.00	

Prices are for knives to cut sections of 3, 4, 5 pieced elbows, as may be ordered, 90 degrees and with the seam in the throat.

Knives for elbows with seam on the side cost 10% more than the above prices.

Knives for elbows of special angles are subject to the proper extra charge.

## Machinery for Pieced Elbows



We are making a specialty of outfits for pieced elbows and are prepared to furnish—

**SQUARING SHEARS** of various sizes, for foot or power.

**FOR CUTTING THE SECTIONS**

Curved shears and knives, or  
Press and dies.

**FORMING ROLLS** for hand or power.

**LONGITUDINAL JOINT**

Press and dies for punching rivet holes.  
Folder and Groover for lock seam, or  
Press with Duplex Side Seaming Attachment.

**CIRCULAR JOINT—**

Burring, Double Edging and Seam Closing Machines for hand or power.  
Crimping and Beading Machines, for hand or power.

**IN ORDER TO QUOTE ON AN OUTFIT**, we must have the following particulars:

Diameters of the various sizes of elbows.

How many pieces does each elbow consist of?

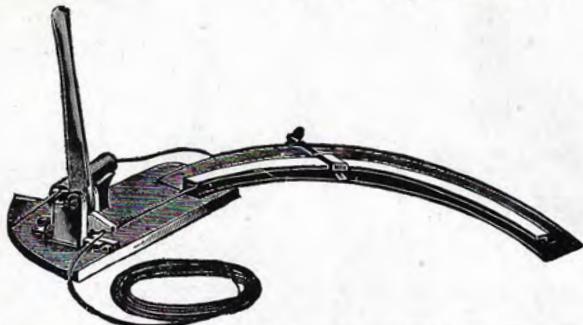
Angle of elbows.

Are there any special requirements in regard to the style of circular joint?  
Extreme thickness of material.

Is the longitudinal joint to be in the throat and riveted, or on the side of the elbow, in which case it can be lock seamed?

Are hand or foot operated machines desired for small output, or power machinery for manufacturing purposes?

## Wire Cutter and Bail Former

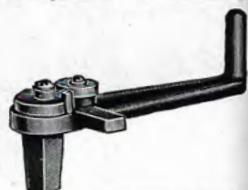


Wire is taken from the coil, gauged and cut to length. Will cut  $\frac{1}{4}$  inch and lighter wire. The curved gauge with stop is graduated for lengths from 2 to 60 inches. Illustration shows the bail partly formed, and with the bail handle in position.

	Code Word	Shipping Weight	Price
Wire Cutter and Bail Former.....	Redeton	45 lbs.	\$10.00

### Miller's Wire Bail Former

For forming hooks on wire bails for buckets, etc. Suitable for  $\frac{3}{16}$  inch and lighter wire. Gauge is graduated



	Code Word	Net Weight	Price
Miller's Wire Bail Former.....	Redesire	3 lbs.	\$1.50

### Wire Straightener for Hand

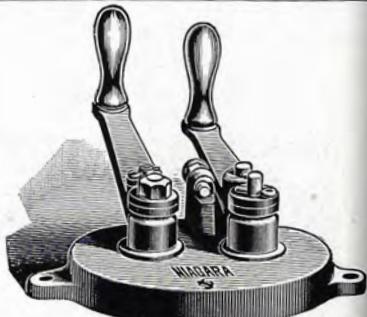


For straightening wire from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch diameter. A pair of pliers is used to pull the wire through the rolls.

	Code Word	Net Weight	Price
Wire Straightener for hand.....	Reden	12 lbs.	\$6.00

### Niagara Oval Handle Former

Suitable for forming oval handles, 3 to  $3\frac{3}{4}$  inches inner length, of  $\frac{3}{16}$  inch and lighter wire. Forming pieces for end curves of  $\frac{1}{2}$  inch and  $\frac{5}{8}$  inch radius are furnished.



	Code Word	Net Weight	Price
Niagara Oval Handle Former.....	Redigir	7 lbs.	\$3.00

## Tinners' Stakes

Wrought Iron with Steel Face

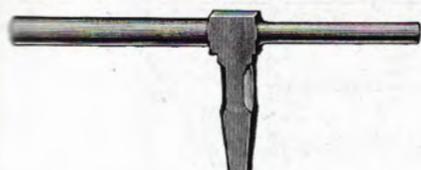


Beakhorn

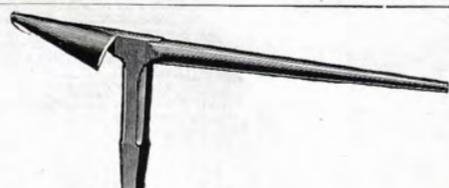


Double Seaming

	Dimensions	Weight	Price
No. 1 Beakhorn .....		50 lbs.	\$15.00
No. 2 Beakhorn .....		40 lbs.	13.25
No. 4 Beakhorn .....		32 lbs.	10.00
No. 1 Double Seaming ..	Large end 17", small end 12" .....	42 lbs.	9.00
No. 2 Double Seaming ..	Both ends 11" .....	38 lbs.	8.00



Conductor



Blowhorn

	Dimensions	Weight	Price
No. 0 Conductor .....	Both ends 14" long, 1 7/8 & 1 3/8" diam.	25 lbs.	\$6.00
No. 00 Conductor .....	Long end 2x20", short end 1 1/2x14" .....	35 lbs.	7.00
Blowhorn .....	Large end 9", small end 17 1/2" .....	14 lbs.	5.00

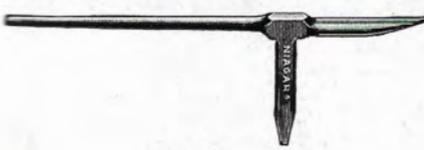


Creasing, with Horn



Common Creasing

	Dimensions	Weight	Price
Creasing, with horn .....	Round end 9 1/2", flat end 6 1/2" .....	13 lbs.	\$4.50
Common Creasing .....	14 1/2" long .....	13 lbs.	4.00



Candlemould



Needle Case

	Dimensions	Weight	Price
Candlemould .....	Small end 18", horn 8 1/2" .....	8 lbs.	\$2.75
Needlecase .....	Flat end 8", small end 10 1/2" .....	5 lbs.	2.25

**Tinners' Stakes**  
Wrought Iron with Steel Face



Coppersmith's Square

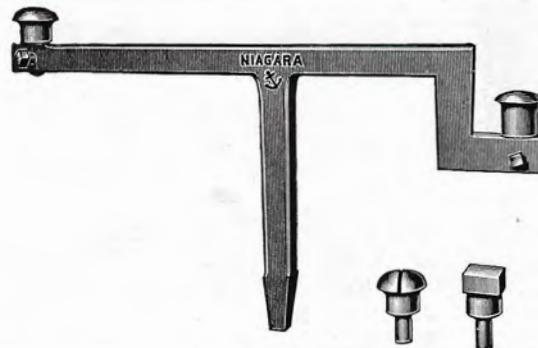


Bevel Edge



Common Square

	Dimensions	Weight	Price
Coppersmith's Square.....	Face $2\frac{5}{8}$ x $4\frac{1}{2}$ inches	11 lbs.	\$3.50
Common Square.....	Face $2\frac{5}{8}$ x $4\frac{1}{2}$ inches	11 lbs.	3.00
Large Square.....	Face $3\frac{1}{2}$ x $5\frac{1}{2}$ inches	16 lbs.	7.00
Small Square.....	Face $2\frac{3}{8}$ x $1\frac{1}{2}$ inches	4 lbs.	2.00
No. 1 Bevel-edged Square.....	Face 3 x 5 inches	14 lbs.	6.00
No. 2 Bevel-edged Square.....	Face $2\frac{1}{2}$ x $4\frac{1}{2}$ inches	12 lbs.	5.00



	Weight	Price
Teakettle with four heads.....	90 lbs.	\$15.75
Heads for Teakettle.....		1.75



Hatchet



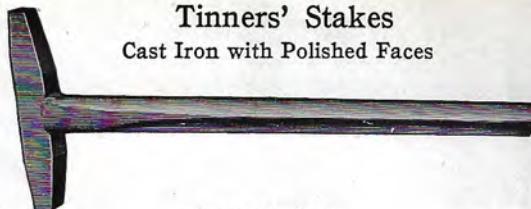
Bottom

HATCHET	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Net weight ..... lbs.	13	11	9	7	5	4
Length of blade ..... inches	16	14 $\frac{1}{2}$	13	11	9	7
Price.....	\$5.00	\$4.25	\$3.50	\$2.75	\$2.25	\$1.75

BOTTOM

BOTTOM	No. 1	No. 2	No. 3	No. 4
Net weight ..... lbs.	3	3	2	2
Width ..... inches	1 $\frac{3}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	1
Price .....	\$1.00	\$0.80	\$0.75	\$0.50

**Tinners' Stakes**  
Cast Iron with Polished Faces

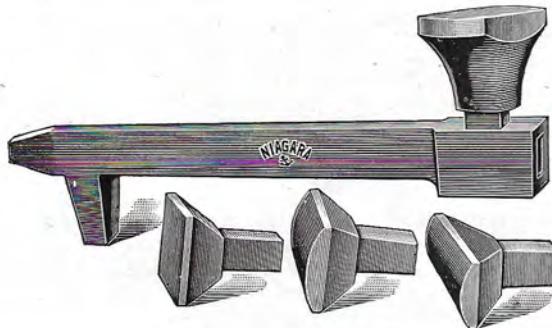


Round Head

Solid Mandrel

Bath Tub

	Dimensions	Weight	Price
No. 1 Conductor . . . .	Large end $2\frac{1}{4} \times 15''$ , small end $1\frac{1}{4} \times 11\frac{1}{2}''$	30 lbs.	\$4.00
No. 2 Conductor . . . .	Large end $1\frac{3}{4} \times 14''$ , small end $1\frac{1}{4} \times 10''$	20 lbs.	3.00
No. 00 Solid Mandrel . . . .	60 inches long to the standard . . . .	120 lbs.	10.00
No. 0 Solid Mandrel . . . .	40 inches long to the standard . . . .	80 lbs.	6.00
No. 1 Solid Mandrel . . . .	34 inches long to the standard . . . .	60 lbs.	5.00
No. 2 Solid Mandrel . . . .	30 inches long to the standard . . . .	40 lbs.	4.00
No. 2½ Solid Mandrel . . . .	30 in. long to the standard, for 2 in. pipe	30 lbs.	4.00
No. 3 Solid Mandrel . . . .	27 inches long to the standard . . . .	30 lbs.	3.00
Round Head . . . .		10 lbs.	1.25
Bath Tub . . . .		12 lbs.	1.25



	Weight	Price
Double Seaming Stake with four heads . . . .	100 lbs.	\$9.00
Extra Heads, each . . . .		1.50

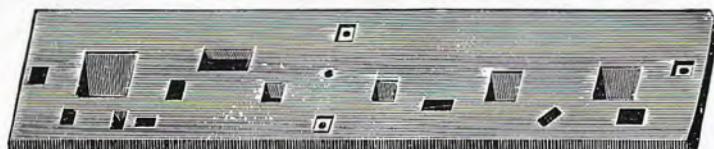


	Dimensions	Weight	Price
No. 000 Hollow Mandrel . . . .	36 in. entire length, 3 in. diam. . . .	30 lbs.	\$5.00
No. 0 Hollow Mandrel . . . .	40 in. entire length, 4 in. diam. . . .	50 lbs.	5.50
No. 00 Hollow Mandrel . . . .	60 in. entire length, $4\frac{7}{8}$ in. diam. . . .	95 lbs.	10.00
Extra Hollow Mandrel . . . .	48 in. entire length, $11\frac{3}{4}$ in. diam., flat part 15 in. wide . . . .	260 lbs.	25.00
Hollow Mandrel Fasteners . . . .			.60



	Dimensions	Weight	Price
No. 12 Mandrel . . . .	Rounded part 26 in. long, entire length $44\frac{1}{2}$ in. . . .	50 lbs.	\$5.00

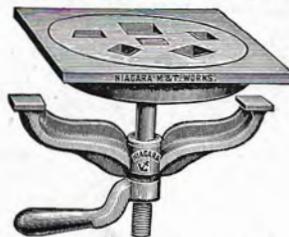
## Bench Plates



They are screwed to a bench to hold Stakes and Bench Shears. The top surface is planed.

	Code Word	Net Weight	Price
No. 0 Bench Plate, 48 x 12 inches .....	Redoblo	70 lbs	\$9.00
No. 1 Bench Plate, 37 x 8 inches .....	Redolebit	50 lbs.	5.00
No. 2 Bench Plate, 30 x 8 inches .....	Redoma	30 lbs.	3.00

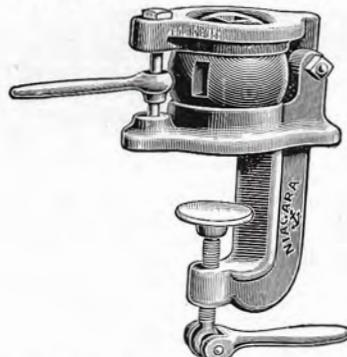
## Revolving Bench Plate



This Plate is inserted into a work bench, to hold stakes, shears, etc., in position convenient for the workman. Size 9 x 9 inches.

	Code Word	Weight	Price
Revolving Bench Plate.....	Redonat	18 lbs.	\$3.50

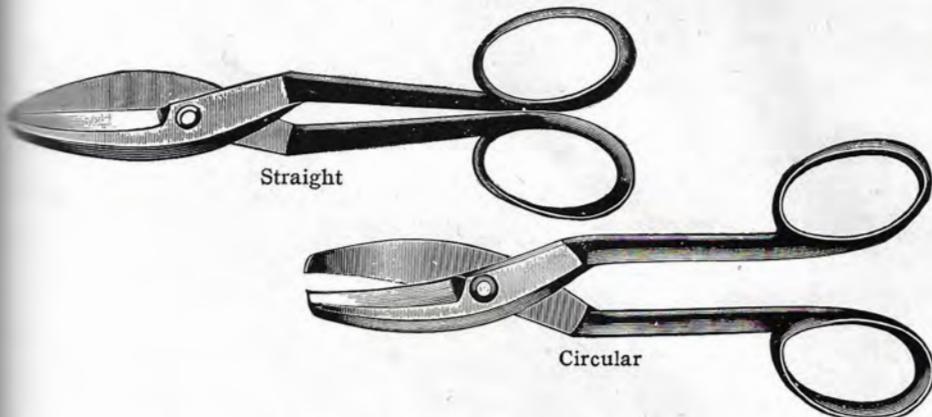
## Niagara Bench Shear Holder



Fastens to the bench like machine standards. The Bench Shear can be held in any position and at any desired angle.

	Code Word	Weight	Price
Bench Shear Holder .....	Redondo	16 lbs.	\$3.00

Niagara Snips  
Drop Forged and Steel Laid



Niagara Snips are particularly made to satisfy Sheet Metal Workers, the most exacting users of Snips (distinguished from other workmen who use them for rough work). Drop forged of refined iron, with a special quality of high grade tool steel welded to the jaws. The cutting parts are properly hardened, insuring a durable cutting edge.

They are so ground and fitted that they will cut smoothly and easily. The bearing surfaces around the bolt holes fit closely.

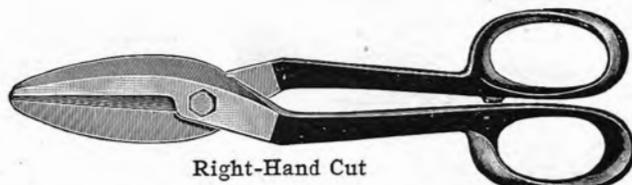
These Snips, being correctly proportioned, are strong and powerful but not clumsy. The bows or loops are shaped to fit the hand. They will not lame and tire the operator in continuous use.

NIAGARA SNIPS	No. 6 1/2	No. 7	No. 8	No. 9	No. 10
Length of jaws from center of pivot.. in.	4 3/4	4 1/4	3 3/4	3 5/8	3 1/8
Net weight .....	50	42	35	24	19
Niagara Straight Snips .....	per pair	\$3.00	\$2.50	\$2.00	\$1.50
Code word .....	Redster	Reduce	Reduit	Reduvio	Redwan
Niagara Circle Snips .....	per pair	\$4.25	\$3.50	\$3.00	\$2.50
Code word .....	Reeders	Reefing	Reefs	Reeksen	Reenter

Regular quotation applies to Niagara Snips "LEFT HAND," which are sent unless otherwise ordered. They cut on the left hand side of the upper jaw and the bows of the handles are shaped for the right hand of the operator, as shown in the illustration.

In addition we can furnish—

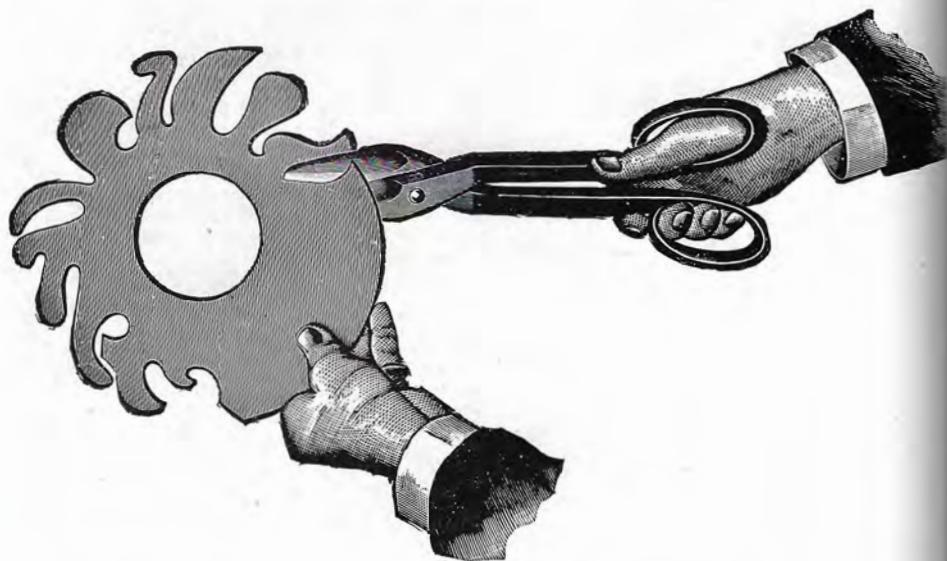
NIAGARA STRAIGHT SNIPS "RIGHT HAND," cutting on the right hand side of the upper jaw, and with handle bows shaped for the right hand.



NIAGARA SNIPS FOR LEFT-HANDED WORKMEN, cutting on the right hand side of upper jaw, and with handle bows shaped for the left hand. Extra charge for Straight Snips of this style 60 cents net; Circle Snips \$1.00 net.

## Buffalo Combination Snips

Drop Forged and Steel Laid



They possess all the desirable features of our "Niagara" Snips, and their jaws are so shaped that curves, scrolls and irregular shapes can be cut, as well as straight lines. The jaws allow the material to pass freely when cutting curves or changing the direction of the cut.

BUFFALO SNIPS	No. 17	No. 18	No. 19
Length of jaws from center of pivot.....inches	4 $\frac{1}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{8}$
Net weight .....ounces	42	35	24
Price .....per pair	\$2.50	\$2.00	\$1.50
Code word .....	Reepoot	Refago	Referat

Our quotation applies to the regular Buffalo Snips with straight jaws cutting on the left hand side of the upper jaw, as shown in the illustration.

We can also furnish, to special order—

**BUFFALO SNIPS, "RIGHT HAND,"** cutting on the right hand side of the upper jaw.  
Extra charge 25 cents net.

**BUFFALO SNIPS FOR LEFT-HANDED WORKMEN,** cutting on the right hand side of the upper jaw, and with handle bows shaped for the left hand.  
Extra charge \$1.00 net.

**BUFFALO CIRCLE SNIPS WITH CURVED JAWS,** cutting on the left hand side of upper jaw and with handle bows shaped for the right hand.  
Extra charge 50 cents net.

## No. 5 Extra Heavy Snips



They have short, stout jaws, and long handles. Will cut No. 18 iron. Drop forged and laid with hardened steel.

EXTRA HEAVY SNIPS	No. 5
Length of jaws from center of pivot.....	inches 3
Length over all .....	inches 16
Net weight.....	ounces 40
No. 5 Niagara Snips .....	per pair \$3.50
Code word .....	Redouble

## Niagara Hand Slitting Shears



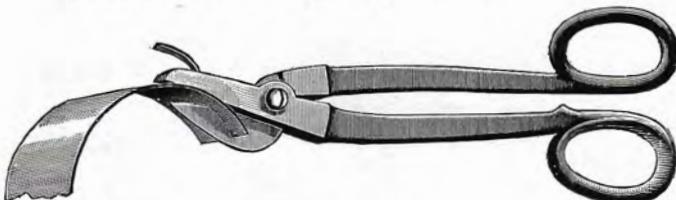
Distinguished through the peculiar shape and arrangement of the jaws and handles. The lower jaw is relieved to allow the material to slide backwards freely. Both handles remain above the work in cutting.

Sheets of any length can be cut apart without trouble, or injury to the hands of the operator. Especially adapted to cutting corrugated sheets lengthwise.

Forged of solid steel, and the jaws laid with best cast steel, properly tempered. Total length 13½ inches.

	Code Word	Net Weight	Price
Niagara Hand Slitting Shears, 3 inch cut .....	Referm	42 ounces	\$3.00

## Niagara Double Cutting Shears—Forged

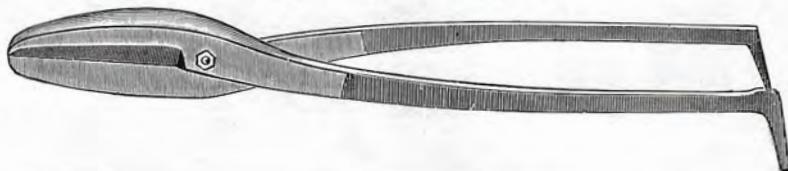


Drop forged of refined iron. The center blade is of solid tool steel and the outer jaw is steel-laid.

Will cut apart cylinders of sheet metal, such as stove pipe, without leaving ragged edges. Useful in cutting holes in sheets and cutting off the bottoms of cans, pails, etc. The center blade is pointed to be readily inserted into the metal, to start the cut. Total length 13½ inches.

	Code Word	Net Weight	Price
Niagara Double Cutting Shears .....	Reenvite	36 ounces	\$3.00

## Niagara Bench Shears



	No. 00	No. 0	No. 1	No. 2
Length of jaws from center of pivot . . . . .	inches	12 1/4	11	9 1/2
Entire length . . . . .	inches	46	41	36
Net weight . . . . .	lbs.	30	27	20
Code word . . . . .		Refert	Refigur	Refill
Price . . . . .		\$13.50	\$12.00	Refilon \$7.00
<hr/>				
No. 3	No. 4	No. 5	No. 6	
Length of jaws from center of pivot . . . . .	inches	8 1/2	8	7
Entire length . . . . .	inches	31 1/2	29	27 1/2
Net weight . . . . .	lbs.	13	10	8
Code word . . . . .		Refina	Refind	Refix
Price . . . . .		\$6.00	\$5.00	Reflab \$3.50

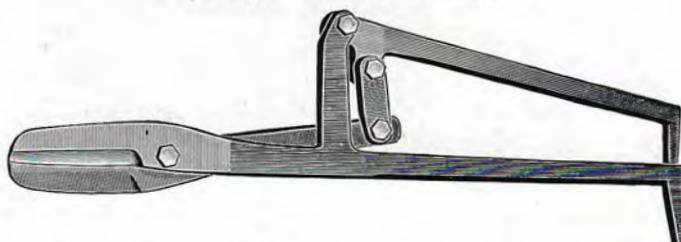
## Elbow Bench Shears



The jaws are rounded similar to those of Buffalo Snips, to permit of cutting curves and irregular shapes.

ELBOW BENCH SHEARS	A	B	C
Length of jaws from center of pivot . . . . .	inches	5 1/4	7
Entire length . . . . .	inches	26 1/2	33 1/2
Net weight . . . . .	lbs.	8 1/2	20
Code word . . . . .		Refflare	Reflect
Price . . . . .		\$5.25	\$12.00
<hr/>			
Reflesso \$20.00			

## Compound Bench Shears



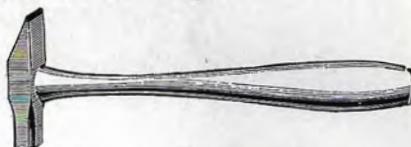
These are extra heavy and powerful Shears.

COMPOUND BENCH SHEARS	No. 20	No. 25
Length of jaws from center of pivot . . . . .	inches	8 1/2
Entire length . . . . .	inches	46
Will cut soft steel up to . . . . .	inches	3 1/2
Net weight . . . . .	lbs.	47
Code word . . . . .		Rifado
Price . . . . .		\$25.00
<hr/>		
Riffalo \$45.00		

## Riveting and Setting Hammers—Bright



Riveting Hammer



Setting Hammer

	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5
Weight complete.....ounces	52	28	23	14	11	8
Size of face.....inches	1 1/2	1 1/8	1	7/8	3/4	5/8
Riveting Hammers.....each	\$1.30	\$0.82	\$0.70	\$0.57	\$0.45	\$0.40
Setting Hammers.....each		\$0.82	\$0.70	\$0.57	\$0.45	\$0.40

## Raising Hammers



	No. 1	No. 2	No. 3	No. 4
Diameter of large face.....inches	2 1/4	2 1/8	1 3/4	1 3/8
Diameter of small face.....inches	1 5/8	1 1/2	1 3/8	1 1/8
Weight.....lbs.	4 1/2	3 1/4	2 1/4	1 1/2
Raising Hammers, handled....each	\$2.25	\$1.75	\$1.25	\$0.75

## Rivet Sets and Headers



Forged of steel and hardened.

	No. 00	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
Size of hole.....inch	5/16	9/32	1/4	7/32	3/16	11/64	5/32	9/64	1/8	7/64
For Iron Rivets.....	14	10&12	8	6	4&5	2 1/2&3	1 3/4&2	1 1/2	1 1/4	10&12
Rivet Sets and Headers .. each	\$0.75	\$0.75	\$0.63	\$0.63	\$0.50	\$0.50	\$0.37	\$0.37	\$0.32	\$0.32

## Grooving Tools



Forged of steel and hardened.

	No. 00	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
Sizes.....inch	1/2	7/16	3/8	5/16	1/4	7/32	3/16	5/32	9/64	1/8
Grooving tools..each	\$0.75	\$0.75	\$0.63	\$0.63	\$0.50	\$0.50	\$0.37	\$0.37	\$0.25	\$0.25

## Hollow Punches



Solid Forged of Tool Steel and Hardened

Diameter.....inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1$	$1\frac{1}{8}$
Each .....	\$0.25	\$0.38	\$0.50	\$0.63	\$0.75	\$0.88	\$1.00	\$1.13
Diameter.....inch	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{8}$
Each .....	\$1.25	\$1.38	\$1.50	\$1.63	\$1.75	\$2.25	\$2.50	\$2.66
Diameter.....inch	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{5}{8}$	$2\frac{3}{4}$	$2\frac{7}{8}$	3	
Each .....	\$2.81	\$2.97	\$3.13	\$3.28	\$3.44	\$3.60	\$3.75	

These are the regular sizes, made for stock. Other sizes can be made to order, at special prices.

Set of Hollow Punches, one each,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$  inch ..... per set \$5.50

## Solid Punches—Cast Steel



Size of hole.....inch	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{3}{16}$	$\frac{11}{64}$	$\frac{5}{32}$	$\frac{9}{64}$	$\frac{1}{8}$	$\frac{7}{64}$

Solid Punches, Nos. 0, 1, 2, 3, 4, 5, 6, 7, 8 and Prick..... each \$0.12

Set of Solid Punches (4 punches, 2 chisels) ..... per set .72

## Wire Chisels



Wire Chisel



Lantern Chisel

Wire Chisels.....inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1$
Price .....each	\$0.08	\$0.09	\$0.10	\$0.11	\$0.12	\$0.13	\$0.14
Wire Chisels.....inch	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	

Lantern Chisels, common size ..... each \$0.12

## Scratch Awls

NIAGARA  
Scratch Awl ..... per dozen ..... \$1.50

## Tinners' Mallets

### Seasoned Hickory

Tinners' Mallets, assorted, from 2 to 3 inches, per dozen \$1.50

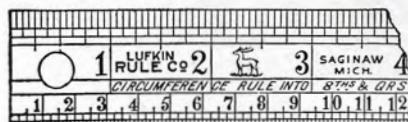
Tinners' Mallets, 3 inches..... per dozen 1.75

Tinners' Mallets,  $3\frac{1}{2}$  inches ..... per dozen 3.25

Tinners' Mallets, 4 inches ..... per dozen 4.50



## Steel Circumference Rule



This rule gives the circumference of circles by simply measuring the diameters. The top edge is graduated in sixteenths of inches; the bottom edge with so-called "circumference inches" divided into eighths. The divisions of this edge, compared with the opposite edge, bear the same ratio inversely to each other as the diameter of a circle to its circumference.

The reverse side gives useful table of measurements.

Steel Circumference Rule, 36 inches long, plain.....	each	\$2.50
Steel Circumference Rule, 36 inches long, nickelized.....	each	3.00

## Straight Edge--Steel



Made of steel, with beveled edge.

	Code Word	Weight	Price
8 feet long, 2 1/4 x 1/4 .....	Redopelo	12 1/2 lbs.	\$4.00
4 feet long, 2 1/4 x 1/4 .....	Redonnant	6 1/2 lbs.	3.00

## Soldering Coppers



With square points for common use. With flat points for bottoms.

Weights — 1, 1 1/2, 2, 2 1/2, 3, 4, 5, 6, 7, 8, 9, 10, 12 lbs. per pair.	per lb.	\$
Tinners' Soldering Coppers.....		

## Slater's Tools



Stake



Ripper



Hammer

RIPPER has a tool steel blade 20 inches long.

HAMMER is forged of steel, tempered and nicely polished.

STAKE is 18 inches long, forged of steel.

	Net Weight	Price
Slater's Ripper.....	2 1/2 lbs.	\$2.00
Slater's Hammer.....	1 1/2 lbs.	3.00
Slater's Stake.....	2 1/2 lbs.	.75
Set of Slater's Tools—Ripper, Hammer and Stake .....		5.50

## Tools for Sheet Metal Roofing



Steel Roofing Tongs



Gutter Tongs



Adjustable Roofing Tongs

### Steel Roofing Tongs

Steel blades 18 inches long. The handles are forged.  
Regular sizes  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2 inches.

	Code Word
Set of common gauge Roofing Tongs, 1 and $1\frac{1}{4}$ inches .....	Reflet
Set of wide gauge Roofing Tongs, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches .....	Reflexif
	Weight
Steel Roofing Tongs..... per set of two	15 lbs.
	Price
	\$6.00

### Adjustable Steel Roofing Tongs

Steel blades 18 inches long. The handles are forged.  
Each pair of Tongs is suitable for edges  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inches wide. The adjusting pins are screwed in the proper positions according to the desired width of edge.

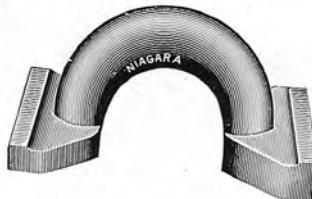
	Code Word
Adjustable Roofing Tongs .....	Refloat
..... each	9 lbs.
	Price
	\$4.00

### Gutter Tongs

Steel blades 14 inches long, forged handles. Depth of throat, 14 inches.

	Code Word
Gutter Tongs .....	Reflux
..... each	8 lbs.
	Price
	\$4.00

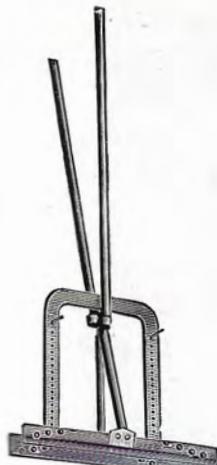
### Hand Roofing Double Seamers



Each Seamer is made for two widths. In case of order state sizes wanted.  
Common Gauge Seamers follow 1 and  $1\frac{1}{4}$  inch tongs.  
Wide Gauge Seamers follow  $1\frac{1}{4}$  and  $1\frac{1}{2}$  inch tongs.

	Net Weight
Hand Roofing Double Seamers .....	15 lbs.
..... per set of two	\$1.75

## Tools for Sheet Metal Roofing



Deep Throat Tongs



Handy Tongs



Clamp Tongs

### Deep Throat Roofing Tongs

Steel blades 15 inches long. Adjustable from  $\frac{1}{2}$  to 10 inches, varying by  $\frac{1}{2}$  inch.

	Code Word	Net Weight	Price
Deep Throat Roofing Tongs..... each	Refogar	11 lbs.	\$6.00

### Handy Tongs

A most useful tool for sheet metal workers. Blades  $6\frac{1}{2}$  inches long.

	Code Word	Net Weight	Price
Handy Tongs..... each	Riffeln	2 lbs.	\$1.50

### Clamp Tongs

Intended to draw the two layers of tin roofing together before putting on the cleats. Steel blades 6 inches long, throat 6 inches deep.

	Code Word	Net Weight	Price
Clamp Tongs..... each	Riffarir	6 lbs.	\$2.25

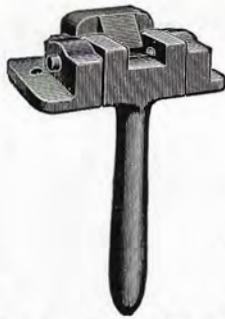
### Wood Roofing Folders



COMMON WOOD ROOFING FOLDERS for locks  $\frac{5}{16}$  inch wide.

IMPROVED WOOD ROOFING FOLDERS for locks from  $\frac{3}{16}$  to  $\frac{3}{8}$  inch wide. There are recesses in the steel blades to receive the edges previously folded on two parallel sides, when folding the other two sides.

	Code Word	Shipping Weight	Price
Common Wood Roofing Folders, for 20 inch tin.	Reform	7 lbs.	\$2.50
Common Wood Roofing Folders, for 28 inch tin.	Refosso	12 lbs.	3.50
Improved Wood Roofing Folders, for 20 inch tin	Regnat	8 lbs.	3.50
Improved Wood Roofing Folders, for 30 inch tin	Regoado	15 lbs.	5.00



Brace and Cleat Bender



Brace and Wire Bender

### Brace and Cleat Benders

Adapted to bending braces for gutters, leaders, etc. Will bend various thicknesses up to  $\frac{1}{4}$  inch. They do not make sharp bends.

	Code Word	Net Weight	Price
No. 1 Brace and Cleat Bender, $1\frac{1}{2}$ inches wide....	Rehob	18 lbs.	\$4.00
No. 2 Brace and Cleat Bender, 2 inches wide ....	Rehogo	26 lbs.	5.00

### Brace and Wire Bender

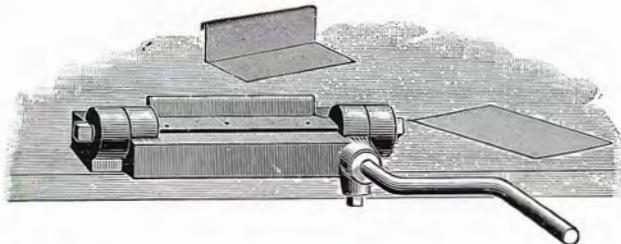
Intended for making braces up to  $3\frac{1}{2}$  inches wide for gutters, leaders, cornices, etc.

The clamping jaw can be adjusted for various thicknesses of material up to  $\frac{1}{4}$  inch, by means of the set screws on top; also laterally by means of the set screws in the rear, for forming sharper and rounder bends, ogees, etc.

The handle can be used in the center or on either side. The clamping jaw is reversible and it has grooves of different widths for bending wire.

	Code Word	Shipping Weight	Price
Niagara Brace and Wire Bender.....	Reholl	60 lbs.	\$12.50

### Niagara Cleat Formers



Will form a cleat for standing seam roofing complete at one operation.

No. 1 for cleats up to 4 inches long.

No. 2 for  $1\frac{1}{4}$  and  $1\frac{1}{2}$  inch cleats up to  $2\frac{1}{2}$  inches long.

	Code Word	Net Weight	Price
No. 1 Cleat Former.....	Regral	5 lbs.	\$2.50
No. 2 Cleat Former.....	Regret	$6\frac{1}{2}$ lbs.	3.00



## Burritts' Roofing Double Seamers—Improved

Used for Standing Seam Roofing

They bend the edge beyond right angles, at the first operation, to facilitate closing down. The Seamers do not crimp the tin and they leave the locks of uniform height. Will double seam hips and ridges with ease.

Ordinarily fitted for IC tin, unless specially ordered for IX tin, to follow  $1\frac{1}{4}$  and  $1\frac{1}{2}$  inch Tongs.

Common Gauge Seamers (code word Regost) follow  $1$  and  $1\frac{1}{4}$  inch tongs; finished seam  $\frac{3}{4}$  inch high.

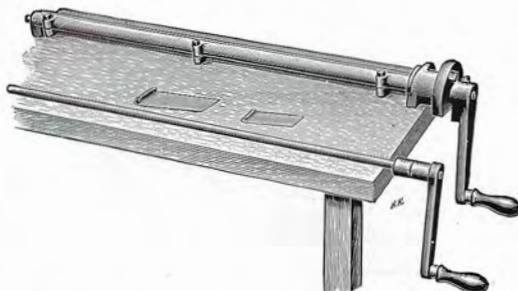
Wide Gauge Seamers (code word Regrada) follow  $1\frac{1}{4}$  and  $1\frac{1}{2}$  inch tongs; finished seam  $1$  inch high.

When ordering state if common or wide gauge Seamers are wanted.

	Weight	Price
Burritts' Roofing Seamers ..... per set of 2 pairs	42 lbs.	\$18.00

These Seamers can be furnished with a link between the one handle and foot treadle, so that the latter will be depressed to perform the second operation when the operator spreads the handles apart. Extra charge 50 cents net.

## Niagara Single and Double Lock Edger



Intended for turning single and double locks on the edges of roofing sheets of light tin. One turn of the crank handle is required, and the angle of the lock is fixed by stops.

Can also be used as an ordinary Gutter Beader.

PRICE includes edging rod for single locks about  $\frac{5}{16}$  inch, double locks about  $\frac{3}{8}$  inch wide, also Gutter Rod  $\frac{1}{2}$  inch diameter.

	Code Word	Shipping Weight	Price
30 inch Single and Double Lock Edger .....	Reinvest	35 lbs.	\$12.50

## Tools for Sheet Metal Roofing



Squeezing Tongs

Malleable Edging Tongs

Single Seaming Tongs

### Malleable Edging Tongs

Used for roll and folding cap roofing, and made for edges 1 and  $1\frac{1}{2}$  inches high. For double seam roofing our Steel Roofing Tongs should be used, as they make a sharper bend.

	Code Word	Net Weight	Price
1 inch Malleable Edging Tongs..... per pair	Regola	10 lbs.	\$1.60
$1\frac{1}{2}$ inch Malleable Edging Tongs..... per pair	Regolf	11 lbs.	1.60

### Single Seaming Tongs—Cast Iron

Used in connection with 1 and  $1\frac{1}{2}$  inch Roofing Tongs. They turn the high edge at right angles, then it is laid down against the lower flange by means of the Squeezing Tongs.

	Code Word	Net Weight	Price
Single Seaming Tongs..... per pair	Rifiat	18 lbs.	\$2.50

### Squeezing Tongs—Cast Iron

Used for compressing roll cap and pressed standing seam roofing. For seam up to 1 in. high. No. 2 presses two indentations while squeezing the seam.

	Code Word	Net Weight	Price
No. 1 Squeezing Tongs..... per pair	Regor	15 lbs.	\$1.35
No. 2 Squeezing Tongs..... per pair	Reggora	15 lbs.	1.55

### Jointer



Used for V crimp and pressed standing seam roofing. Open on both sides and usually made with slots  $\frac{5}{8}$  inch deep.

Jointer .....	\$0.60
---------------	--------

## Niagara Cross Lock Seamer



Intended for compressing the lock seams of tin roofing, and for putting it up in rolls, ready to lay on the roof.

**COMPRESSING BAR** is operated by a powerful toggle movement connected to the foot treadle. The seam is tight and uniform the entire length. The proper position of the sheets is given by two spring pins on the compressing bar. The pins can be raised sufficiently to allow the first lock to pass through.

**EXTENSION TABLE** carries two side gauges, one stationary and the other backed by springs. The distance between gauges is adjustable for .20 and .28 inch tin, and other widths can be readily provided for. The table is hinged to the frame.

**REEL** in the rear of the machine is covered with sheet steel, and its movement is controlled by ratchet and pawl.

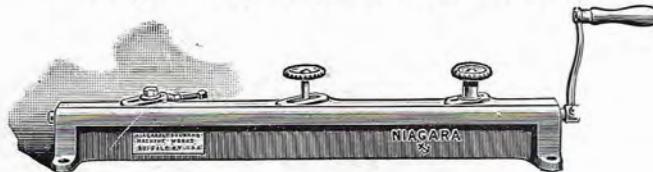
Provision is made that the seams can be soldered before winding the sheets on to the reel. The finished rolls of tin can be removed without difficulty.

No. 1 for single locks, No. 26 and lighter.

No. 2 for double locks, No. 26 and lighter, operated by hand lever instead of foot treadle.

	Code Word	Shipping Weight	Price
No. 1, 30 inch Niagara Cross Lock Seamer.....	Rehash	600 lbs.	\$55.00
No. 2, 30 inch Niagara Cross Lock Seamer.....	Rifilat	700 lbs.	70.00

## Niagara Adjustable Gutter Beaders



Rods of various diameters from  $\frac{3}{8}$  to  $\frac{3}{4}$  inch can be used in the same frame, and allowance can be made in the adjustment for the thickness of the material. The two jaws can be spread apart to facilitate removing the work and rod. Stops give the working position of the movable jaw.

	Code Word	Shipping Weight	Price
30 inch Adjustable Gutter Beader .....	Rehoyar	65 lbs.	\$10.00
42 inch Adjustable Gutter Beader .....	Rehurta	90 lbs.	15.00
48 inch Adjustable Gutter Beader .....	Rehwild	110 lbs.	20.00
60 inch Adjustable Gutter Beader .....	Reibbar	210 lbs.	40.00
96 inch Adjustable Gutter Beader .....	Reiblein	335 lbs.	55.00
120 inch Adjustable Gutter Beader .....	Reich	400 lbs.	65.00

Price includes one rod of regular diameter.

Code words include  $\frac{1}{2}$  inch rod for Gutter Beaders 30 to 48 inches, and  $\frac{5}{8}$  inch rod for 5 to 10 foot machines.

## Iron Bottom Gutter Beaders



Each Iron Bottom Gutter Beader is made for a given diameter of rod.

	Code Word	Net Weight	Price
20 inch Iron Bottom Gutter Beader .....	Reidora	18 lbs.	\$4.00
30 inch Iron Bottom Gutter Beader .....	Reifchen	24 lbs.	6.00
42 inch Iron Bottom Gutter Beader .....	Reifrock	48 lbs.	9.00
60 inch Iron Bottom Gutter Beader .....	Reifstab	100 lbs.	20.00

Price includes one rod of the regular sizes. Unless otherwise ordered we send  $\frac{1}{2}$  inch rod with 20 to 42 inch, and  $\frac{5}{8}$  inch rod with 60 inch Iron Bottom Gutter Beaders.

## Steel Gutter Rods

Regular sizes for 20 to 30 inch Gutter Beaders  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$  and  $\frac{3}{4}$  inch diameter.

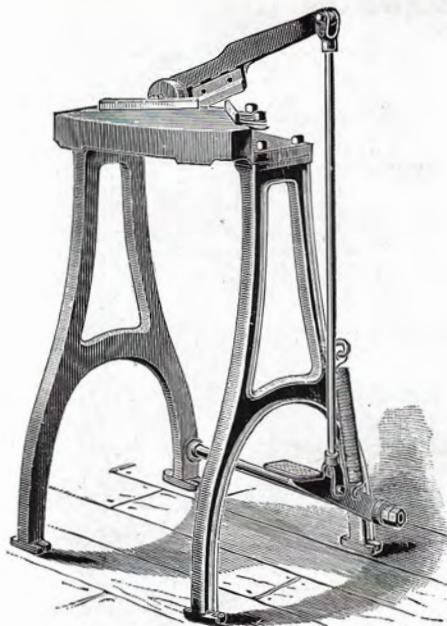
Regular sizes for 42 to 48 inch Gutter Beaders  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  inch diameter.

Regular sizes for 60 to 120 inch Gutter Beaders  $\frac{5}{8}$  and  $\frac{3}{4}$  inch diameter.

Length of rod...inches	20	30	42	48	60	72	96	120
Price .....	\$2.00	\$3.00	\$4.50	\$5.00	\$6.00	\$7.50	\$10.00	\$12.50

Rods longer than 30 inches have a handle at each end.

Rods of other diameters can be made to order.



### Corner Notching Machine

Designed for cutting the corner notches on roofing sheets, etc. Several thicknesses of light tin can be cut at a time.

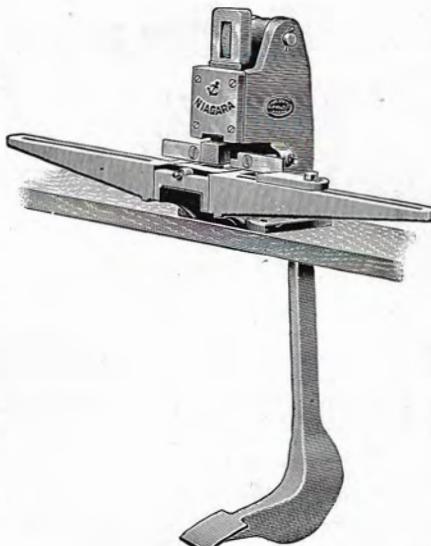
**GAUGES.** One fixed and the other adjustable gauge are provided to regulate the size of the corner notches.

Knives are 6 inches long and adjustable for wear.

	Code Word	Shipping Weight	Price
Corner Notching Machine .....	Regung	200 lbs.	\$28.00

### Niagara Notching Machine

For notching sheet metal for wiring and grooving, for cutting corner and hinge notches, etc. The rectangular die is suitable for notches up to  $1\frac{1}{2}$  inches wide and 2 inches deep. Adjustable side and back gauges are provided, and several thicknesses of light tin can be cut at the same time.



	Code Word	Shipping Weight	Price
Niagara Notching Machine .....	Regulier	160 lbs.	\$36.00

## Buttle's Charcoal Fire Pot



This base-burning Tinners' fire pot has double damper and reversible flue.

Height 16½ inches opening 3¾ x 2¼ inches.

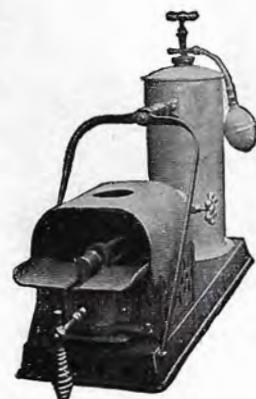
	Code Word	Shipping Weight	Price
Buttle's Charcoal Fire Pots .....	Reinlich	16 lbs.	\$2.25

## No. 3 Gem Gasoline Furnaces

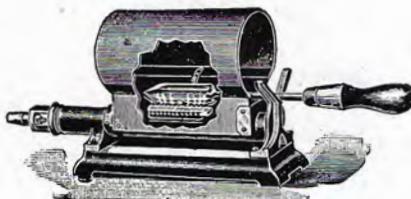
These are efficient heaters. The heat is distributed the full length of the coppers. The aperture in the hood admits large coppers, which can be heated in a short time.

A drip cup is provided, which generates the gas without smoke or smell. Will work out of doors, or on roofs, in all kinds of weather.

	Code Word	Shipping Weight	Price
No. 3 Gem Furnace, galvanized iron reservoir .....	Reinsert	23 lbs.	\$7.00
No. 3 Gem Furnace, copper reservoir .....	Reisbau	23 lbs.	8.50
Plumber's Hood, extra .....			.50
Plumber's Pot, extra .....			.50



## Excelsior Gas Furnace



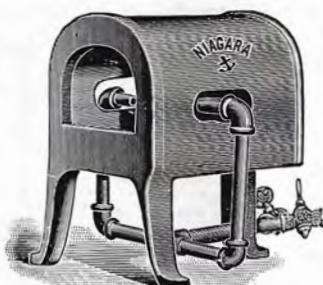
It can be furnished either for illuminating or natural gas, as may be ordered, and it is economical in the use of gas.

	Code Word	Weight	Price
Excelsior Gas Furnace .....	Reisbald	5 lbs.	\$1.75

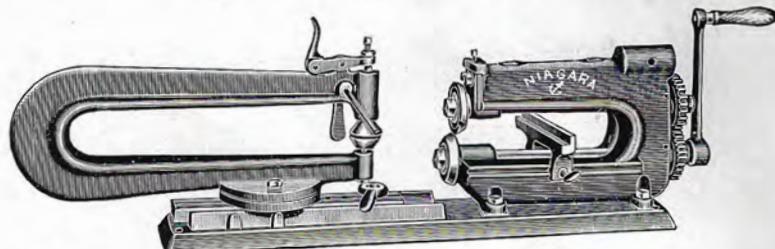
## Gas Pressure Fire Pot

A blower is required to supply air under pressure. One of the stop cocks must be connected to the gas service pipe, and the other to a tin tube leading to the blower. The supply of gas and air should be regulated by means of the cocks to produce a blue flame.

	Code Word	Net Weight	Price
Gas Pressure Fire Pot..	Reisbrot	23 lbs.	\$2.80



## Niagara Waugh's Circle Shears



Intended for cutting light sheet metal into circular shape or strips.

CUTTERS are made of a special quality of high grade tool steel, properly hardened and ground. Adjustment is provided for taking up wear on the cutters and for the thickness of material to be cut.

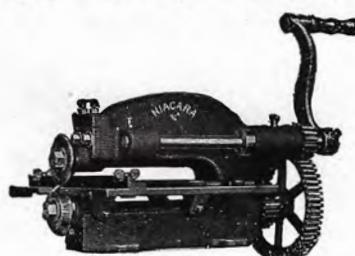
SLITTING GAUGE fitted to the cutting head is readily adjusted for strips of various widths.

CIRCLE ARM has a throat of sufficient depth to permit of cutting from square blanks the largest circles for which the machines are offered. The Circle Arm can be fastened the proper distance from the cutters, according to the diameter to be cut. A graduated scale, divided in  $\frac{1}{16}$  inches, is marked on the support of the Circle Arm. The proper position of the blank is determined by a swinging gauge and the cutters. The material is clamped between the discs by means of an eccentric device.

No. 5 is back geared at the ratio of 4:1.

WAUGH'S CIRCLE SHEARS	No. 1	No. 2	No. 4	No. 5
Code word.....	Reissaus	Reissue	Reithose	Reitochs
Will cut in thickness incl.....	No. 22	No. 22	No. 22	No. 18
Will circle from square blank.....inches	3 to 15	3 to 22	3 $\frac{1}{2}$ to 48	4 to 48
Throat of cutting head to frame.....inches	9 $\frac{3}{4}$	9 $\frac{3}{4}$	9 $\frac{3}{4}$	13
Throat of cutting head to gauge.....inches	9	9	9	12 $\frac{1}{2}$
Throat of circle arm.....inches	12	16	34	36
Shipping weight .....	110	120	300	465
Price of Waugh's Circle Shears.....	\$33.00	\$38.00	\$65.00	\$90.00

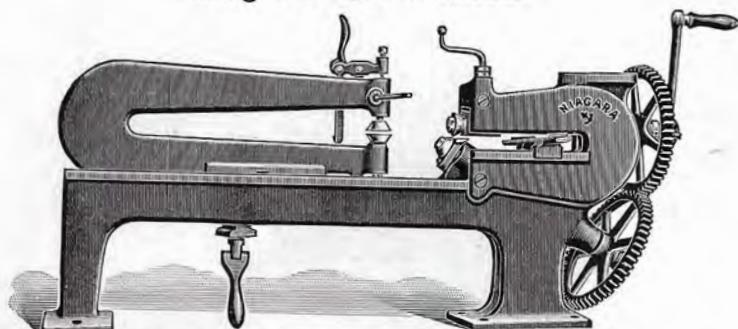
## Niagara Rotary Slitting Shears



These Shears are similar to the cutting heads of our Waugh's Circle Shears. They are furnished to bolt to the bench and equipped with a table carrying the adjustable slitting gauge.

	Capacity	Depth of throat to frame	Code Word	Shipping Weight	Price
No. 2 .....	No. 22	9 $\frac{3}{4}$ in.	Reitvogt	95 lbs.	\$25.00
No. 5 geared .....	No. 18	13 in.	Reixelo	240 lbs.	60.00

## Ring and Circle Shears



These machines are suitable for cutting holes or internal circles and irregular curves, as well as for cutting outside circles and slitting.

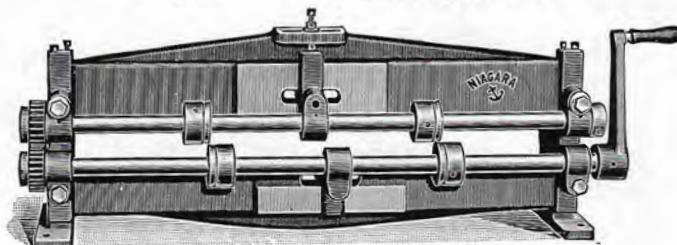
**CUTTERS** are made of a special quality of high grade tool steel, properly hardened and ground. Adjustment is provided for taking up wear on the cutters, and for the thickness of material to be cut. The upper cutter can be raised and lowered to penetrate the stock.

**SLITTING GAUGE** applied to the cutting head is readily adjustable for various widths.

**CIRCLE ARM** has a throat of sufficient depth to permit of cutting from square blanks the largest circles for which the machines are offered. The Circle Arm can be fastened the proper distance from the cutters, according to the diameter to be cut. A graduated scale divided in  $\frac{1}{16}$ th inches is marked on the support of the Circle Arm. The proper position of the blank is determined by two drop gauges and the cutters. The material is clamped between the discs by means of an eccentric device.

RING AND CIRCLE SHEARS	No. 11	No. 13
Will cut in thickness incl. .... No.	20	20
Will circle from square blank .... inches	3 $\frac{1}{2}$ to 22	3 $\frac{1}{2}$ to 42
Throat of cutting head to frame .... inches	9 $\frac{1}{4}$	9 $\frac{1}{4}$
Throat of cutting head to gauge .... inches	9	9
Throat of circle arm .... inches	16	30
Shipping weight .... lbs.	195	280
Price ....	\$35.00	\$45.00
Code word	Reizbar	Reitweg

## Duplex Rotary Slitting Shear



Capacity No. 20 Iron and Lighter

Intended for cutting apart or trimming sheets of any length.

**CUTTERS** are mounted on cast iron hubs and can be fastened to the shafts in various positions. The distance between the cutters is adjustable from 3 $\frac{1}{2}$  to 30 $\frac{1}{2}$  inches. The brackets carrying the upper cutters can be lowered to permit of taking up wear on the cutters.

The users may sink the machine into a work bench, with the upper surface of the lower cutter flush with the bench, and provide gauges at right angles to the machine, one stationary and the other adjustable for different widths of sheets, according to the prevailing conditions.

	Code Word	Shipping Weight	Price
30 inch Duplex Rotary Slitter, with two pairs of cutters.....	Rejolt	300 lbs.	\$80.00

## Niagara Rotary Slitting Shears No. 9

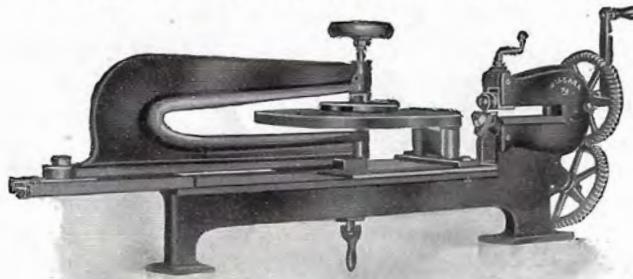


It has a deep throat to permit of cutting sheets a considerable distance from the edge. Useful in the manufacture of culverts, tanks, etc. Flat and corrugated sheets can be cut parallel to the edge of the material, or on a slant, and it is possible to cut across sheets with standard corrugations without materially distorting the stock.

The upper cutter can be raised  $\frac{1}{2}$  inch above the lower cutter to permit of putting the material into place.

ROTARY SLITTER		No. 9
Will cut iron in thickness incl.....	No.	20
Depth of throat .....	inches	42 $\frac{1}{2}$
Diameter of cutters .....	inches	3 $\frac{1}{2}$
Shipping weight .....	lbs.	1000
No. 9 Slitting Shears, for hand .....		\$105.00
Code word .....		Riflard
No. 9 Slitting Shears, with T and L Pulleys .....		\$117.50

## Niagara Shears for Oval and Oblong Work

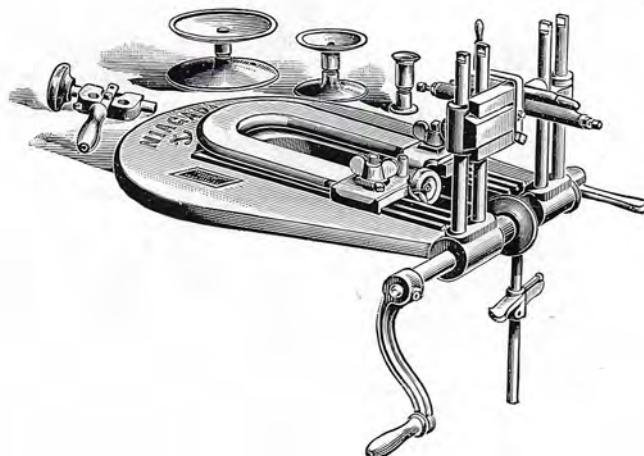


Particularly intended for cutting oval and oblong shapes of sheet metal. For each shape a cam of the proper outline is required, the extra charge depending upon shape and dimensions. The work may be up to 40 inches long, but the radius of the end curves must not be less than 5 inches.

The sheet is clamped between the cam and upper disc, the outside of the cam resting on a support with idlers. The clamping arm, pivoted at the outer end, swings sideways during the cutting operation according to the shape to be cut. CIRCLE ARM with 30 inch throat, substituted for the oval attachment, makes the machine suitable for cutting inside and outside circles.

SHEARS FOR OVAL WORK		
Will cut in thickness incl.....	No.	22
Throat of cutting head to frame.....	inches	9 $\frac{1}{4}$
Throat of cutting head to gauge.....	inches	9
Weight about .....	lbs.	425
Price of Oval Shears, without cam .....	\$	
Code word .....		Rigoma
Circle Arm (code word Rigorat), extra .....		\$20.00

## Buffalo Circle Shears and Flanger



### Capacity No. 26 Iron and Lighter

Discs of light sheet metal are cut at one turn of the crank handle and then flanged, at the same setting, by means of the Edge Turner or Burring Attachment.

WILL CUT circles from  $2\frac{1}{2}$  to 23 inches diameter. A yoke unites both cutter stocks, so that, when once adjusted, the cutters need not be re-adjusted for circles of different diameters. The material is firmly gripped between the discs by means of an eccentric clamping device. A graduated scale is marked on the frame to facilitate adjustment according to the diameter wanted, and a swinging gauge facilitates centering the blank.

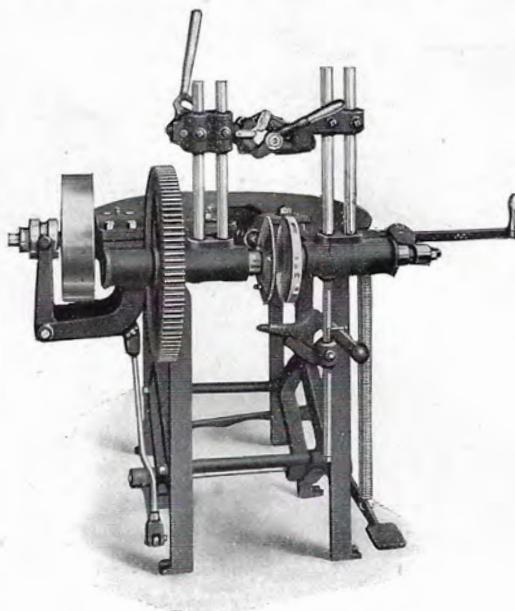
EDGE TURNER will flange discs from  $2\frac{1}{4}$  to 11 inches diameter up to  $\frac{1}{4}$  inch high. The flange is turned at right angles. An extra pair of clamping discs is required for each diameter to be flanged, and a smooth edge can be obtained. The Edge Turner is preferable to the Burring Attachment when a number of pieces of uniform diameter are required.

BURRING ATTACHMENT will flange discs from 5 to 22 inches diameter up to  $5\frac{1}{2}$  inch high. The flange can be turned slightly beyond the right angle for double seaming. The diameter of the clamping discs used must be at least  $1\frac{3}{4}$  inches smaller than that of the work.

PRICE includes 4 pairs of discs:  $1\frac{1}{8}$ , 3,  $4\frac{1}{8}$  and  $7\frac{1}{2}$  inches diameter.

	Code Word	Shipping Weight	Price
Buffalo Circle Shears, for cutting only .....	Reisje	155 lbs.	\$28.00
Edge Turner, extra .....			4.00
Burring Attachment, extra .....			7.50

## No. 0 Circle Shears and Flanger



With Burring Attachment

This machine will cut round discs of sheet metal, which can be flanged before being removed from the machine. Jaw Clutch and Pulley are provided that the motion can be stopped quickly, also crank handle for hand use.

**BURRING ATTACHMENT.** Will flange discs of any diameter, between 7 and 30 inches, without using extra discs for each size. The working parts are of tool steel, hardened and ground.

Height of flanges on No. 20 to 22,  $\frac{3}{16}$  to  $\frac{1}{4}$  inch.

Height of flanges on No. 24 to 26,  $\frac{5}{32}$  to  $\frac{3}{16}$  inch.

**EDGE TURNER** will produce smooth flanges on discs from 5 to 20 inches diameter. Each diameter to be flanged requires an extra set of discs. Work of uniform diameter is obtainable.

Height of flanges on No. 20 to 22 up to  $\frac{5}{8}$  inch.

Height of flanges on No. 24 to 28 up to  $\frac{3}{8}$  inch.

**PRICE** includes clamping discs  $3\frac{3}{4}$  and  $7\frac{1}{2}$  inches diameter. Special discs are charged for extra, according to size.

NO. 0 CIRCLE SHEARS AND FLANGER	
Will cut iron in thickness incl.	No.
Will cut in diameter from .....	inches
Depth of yoke .....	inches
Ratio of gearing .....	1:5
Size of pulleys .....	inches
Speed of pulleys .....	R. P. M.
Weight .....	lbs.
Price of No. 0 Circle Shears for cutting only .....	20
Code word .....	4 to 30
Burring Attachment, extra .....	23 $\frac{1}{2}$
Edge Turner, extra .....	1:5
	12 x 2 $\frac{1}{4}$
	300
	860
	\$
	Rifoder
	\$
	\$

## Circle Shears with Flanging Attachment



Intended for cutting and flanging tops and bottoms with rectangular flanges, for sheet metal barrels, tanks, etc. Particularly useful when heads of a variety of diameters are required.

The illustrations show the machine set up for the flanging. When it is desired to use them for cutting, the flanging rolls are removed and cutters substituted. The upper shaft and roll can be laterally adjusted to compensate for various thicknesses of material. In order to avoid distortion of the metal by the flanging operation, two hold-down rolls are mounted on a slide in front of the upper flanging roll.

WILL FLANGE SOFT SHEET STEEL:	No. 407-A	208-A	195	05
3/16 to 1/4", 3-12 ft. diam., in height up to...inches	2 1/4			
3/16 to 1/4", 18-36 inches diam., in height up to inches	1 3/4			
No. 10 .....	1 1/2	1 1/2		
No. 12 .....	1 1/2	1 1/2	1	
No. 14 and 16.....inches	1 1/4	1 1/4	1	
No. 18 .....	1	1	1	1
No. 20 and 22.....inches		3/4	3/4	3/4
No. 24 and 26.....inches	1/2	1/2	1/2	1/2

The flanging rolls regularly furnished with the heavier machines produce corners that are rounded more than those made on lighter machines.

CIRCLE SHEARS WITH FLANGING ATTACHMENT	407-A	208-A	195	05
Will cut in thickness incl.....inches	1/4	No. 8	No. 10	No. 18
Will circle from square blank.....inches	14-60	8-53	8-60	4-48
Throat of cutting head to frame.....inches	25	16 1/2	36 1/2	13
Throat of cutting head to gauge.....inches	23	16	34 1/2	12 1/2
Throat of circle arm.....inches	42	38	44	36
Diam. of flanged discs not less than.....inches	18	14	14	9 1/2
Will flange in thickness incl.....inches	1/4	No. 10	No. 12	No. 18
Weight .....	8700	2100	4500	750
Price, with T. & L. Pulleys.....\$	\$	\$	\$	\$
Stepcone pulley and countershaft extra.....\$	\$	\$	\$	\$

No. 208 can be furnished with circle arm having 52 inch throat; also with Inside Cutting Attachment at extra charge.

## Niagara Foot Squaring Shears

### GENERAL DESCRIPTION

They embody all improvements that have been found of real value in machines of this character. Only the best materials, properly distributed, are used in their construction. The wearing surfaces are large, and adjustments are provided to take up wear. All parts are carefully fitted.

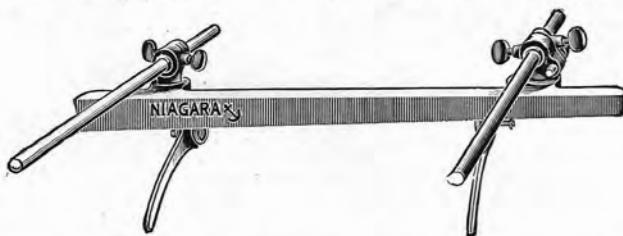
**LENGTH OF CUT.** The actual cutting length of Niagara Squaring Shears is about 1 inch more than the nominal size. The housings are far enough apart that sheets in width equal to the cutting length can be passed through from front to back without obstructions.

**BED** is bolted to the housings, and it can be shifted on its seats towards or away from the upper knife.

**HOLDDOWN** is applied to all Shears 36 inches and longer, and to those made for the heavier gauges. It holds the sheet while being cut, and has one or more openings to enable the operator to see the cutting line.

**KNIVES** are made of high grade steel welded to wrought iron, the steel being properly hardened. The knives are ground true and fit without lining. They can be easily removed for grinding, and provision is made for taking up wear. For cutting cloth, card board, fibre, etc., the upper knife can be made with a long bevel, at extra charge.

**GAUGES.** We furnish a set of front, back, bevel and side gauges. The back gauge, which is carried on brackets fastened to the cutter bar, can be set close up to the lower knife, that narrow strips can be gauged. The table and brackets for the front gauge have T slots. A graduated scale divided in sixteenths inches



is marked on the bed. Back gauge is mounted on *Micrometer Gauge Holders*, which permit of close adjustment. The gauge can be quickly moved approximately to the required position, and the final adjustment is then made by means of the Micrometer device.

**CAPACITIES** given apply to iron or soft sheet steel. In cutting steel running higher in carbon, the hardness of the stock must be taken into consideration, and the extreme thickness reduced accordingly. Do not use Shears for stock exceeding the extreme thickness given by us, even if the pieces to be cut are narrow. In making selections it is well to figure on ample leeway, as the capacity of Squaring Shears is influenced by the sharpness of the knives and by the care with which the adjustments are kept up by the operator.

**SHIPPING.** Our Squaring Shears are usually shipped crated, set up ready for use. When it is desired in shipping to distant points to have the machines knocked down and boxed, there will be the proper extra charge.

### Squaring Shear Knives

Duplicate Knives for Excelsior, Queen City and Hercules Foot Squaring Shears are quotable at the following prices:

Size .....	inches	14	22	30	36	42	52	62
Per pair .....		\$9.00	\$9.00	\$12.00	\$16.00	\$22.00	\$30.00	\$34.00

## Excelsior Foot Squaring Shears



For No. 20 Iron and Lighter

These are accurate and durable machines, well adapted to the ordinary work of Tinsmiths, etc. They work easily from the beginning to the end of the stroke.

GENERAL DESCRIPTION, see page 95.

	Code Word	Shipping Weight	Price
14 inch Excelsior Squaring Shears .....	Rejoneo	210 lbs.	\$33.00
22 inch Excelsior Squaring Shears .....	Relache	350 lbs.	35.00
30 inch Excelsior Squaring Shears .....	Relacion	440 lbs.	50.00
Iron Drop Tables, extra.....			2.00

The illustration shows 30 inch Excelsior Squaring Shears with iron drop leaf tables.

## Queen City Foot Squaring Shears



For No. 18 Iron and Lighter

These Shears are in appearance similar to the "Excelsior," but, being heavier and more powerful, they will cut thicker material.

HOLDDOWN is included in prices of 36 inch and longer Shears.

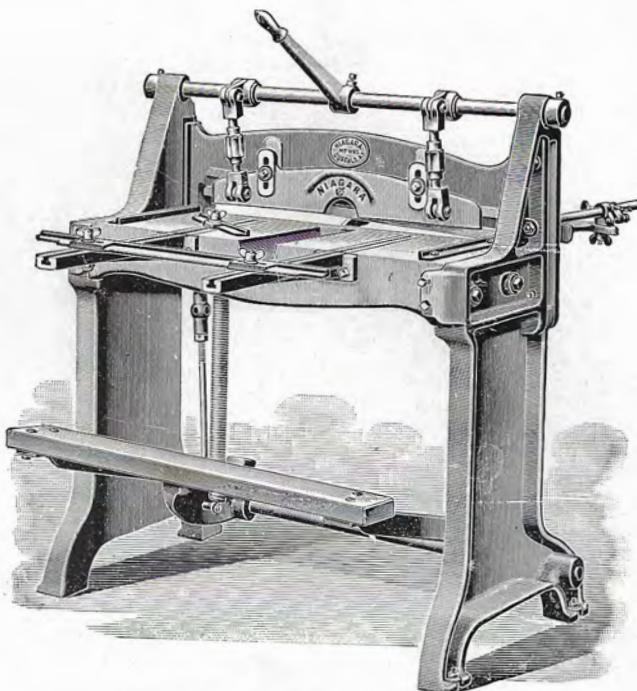
TOP SHELF is included in prices of 22, 30 and 36 inch Shears, but is not furnished with the larger sizes.

STEEL TREADLE is applied to 52 and 62 inch Queen City Shears.

GENERAL DESCRIPTION, see page 95.

	Code Word	Shipping Weight	Price
22 inch Queen City Squaring Shears .....	Relais	365 lbs.	\$40.00
30 inch Queen City Squaring Shears .....	Relampo	500 lbs.	55.00
36 inch Queen City Squaring Shears .....	Relance	610 lbs.	72.00
42 inch Queen City Squaring Shears .....	Reland	800 lbs.	105.00
52 inch Queen City Squaring Shears .....	Relanzo	1000 lbs.	155.00
62 inch Queen City Squaring Shears .....	Relate	1300 lbs.	200.00
Holddown to 30 inch and smaller Shears, extra.....			5.00

## Hercules Foot Squaring Shears



For No. 15 Iron and Lighter

These are substantial and powerful machines. The treadle bars are made of steel and extensible to permit of regulating the leverage according to the thickness of material to be cut.

HOLDDOWN is operated by hand lever. These Shears will not be furnished without this Attachment.

GENERAL DESCRIPTION, see page 95.

	Code Word	Shipping Weight	Price
30 inch Hercules Squaring Shears .....	Relist	750 lbs.	\$
36 inch Hercules Squaring Shears .....	Relodge	850 lbs.	\$
42 inch Hercules Squaring Shears .....	Relutto	1000 lbs.	\$
52 inch Hercules Squaring Shears .....	Remada	1300 lbs.	\$

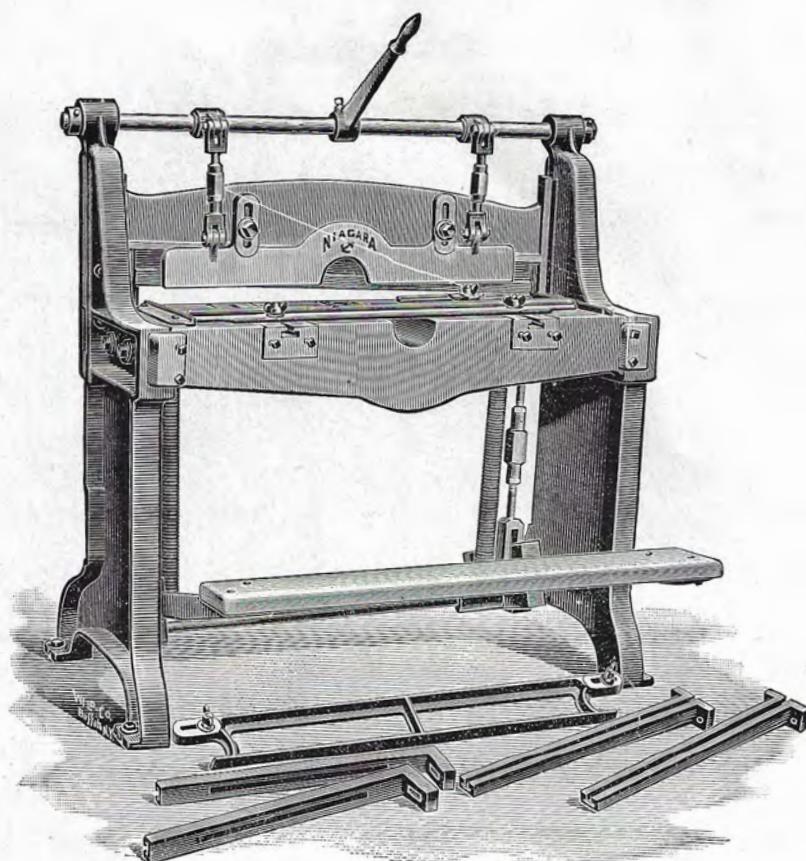
### Hercules Shears with Corrugated Knives

We can furnish our Hercules Shears with knives suitable for cutting across corrugated sheets. The knives are shaped to conform with the corrugations.

Hercules Shears equipped with corrugated knives for  $2\frac{1}{2}$  inch corrugations will cut No. 18 iron and lighter. If the corrugations are smaller, the thickness of stock must be further reduced.

POWER SQUARING SHEARS can be equipped in a similar manner.

## Heavy Foot Squaring Shears



For No. 14 Iron and Lighter

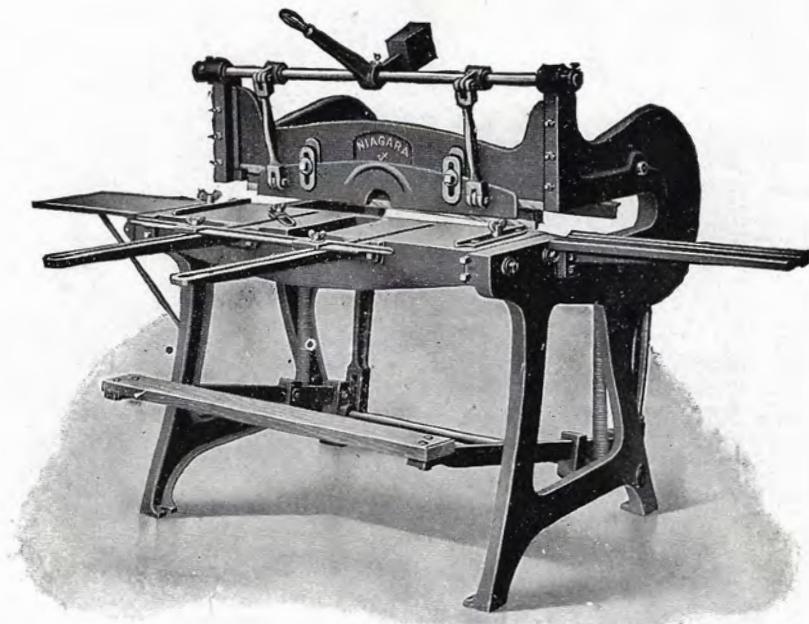
These Shears are suitable for the heaviest work for which it is practicable to use Foot Squaring Shears, but it is preferable to use power driven machines for fairly heavy stock.

The parts are extra heavy, and the wearing surfaces large. The treadle bars are forged of steel and extensible to allow of adjusting the leverage according to the thickness of material to be cut. The Holddown is actuated by hand lever.

GENERAL DESCRIPTION see page 95.

	Code Word	Shipping Weight	Price
36 inch Heavy Foot Squaring Shears .....	Remanso	1150 lbs.	\$
42 inch Heavy Foot Squaring Shears .....	Remedy	1300 lbs.	\$
52 inch Heavy Foot Squaring Shears .....	Remiges	1550 lbs.	\$

## Niagara Foot Gap Shears



For No. 16 Iron and Lighter

These Shears work well and can be relied on for good results. A series of compound levers, which pivot on the housings, connect the cross head to the treadle rods. The gap arms formerly used are omitted, thereby reducing the moving weight.

HOUSINGS have a gap 15 or 18 inches deep, as may be ordered, to permit of cutting apart sheets of any length as far from the edge as the gap allows. The sheets can be moved in cutting position sideways, without obstruction.

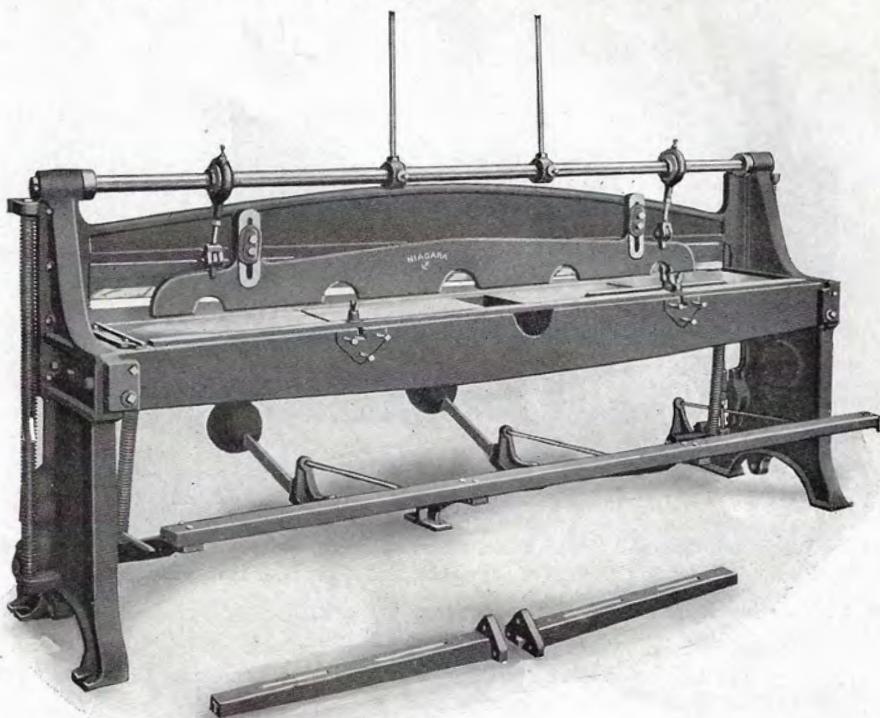
TREADLE BARS are of steel and extensible, to permit of regulating the leverage according to the thickness of material to be cut.

SLITTING GAUGE is attached to the right hand housing, to be used in slitting sheets longer than the knives. After the first stroke the edge obtained at the previous stroke is used to gauge by, not the original edge of the sheet, in which manner alignment of the successive cuts is obtained.

GENERAL DESCRIPTION, see page 95.

	Code Word	Shipping Weight	Price
30 inch Foot Gap Shears	Remodel	1100 lbs.	\$
36 inch Foot Gap Shears	Remojos	1200 lbs.	\$
42 inch Foot Gap Shears	Remorse	1350 lbs.	\$
52 inch Foot Gap Shears	Remus	1600 lbs	\$
For 18 inch throat.....	Renard	extra.....	\$

## Niagara Foot Squaring Shears, No. 172-F, etc.



### Capacity No. 18 Iron and Lighter

These are substantial and powerful machines, well fitted to insure durability and accuracy. HOLDDOWN of No. 196-F is operated by hand lever, as shown in the illustration. The others have a spring holddown.

IMPROVED AUTOMATIC BACK GAUGE TYPE NO. 2, can be substituted for the regular back gauge. It enables the operator to make adjustment for strips of varying widths, while maintaining the alignment of the gauge with the knives, both ends being moved at the same time.

GENERAL DESCRIPTION see page 95.

	Length	Code Word	Shipping Weight	Price
No. 172-F Foot Squaring Shears .....	72 in.	Remind	1600 lbs.	\$
No. 184-F Foot Squaring Shears .....	84 in.	Remisso	2500 lbs.	\$
No. 196-F Foot Squaring Shears .....	96 in.	Obgero	3300 lbs.	\$
No. 1120-F Foot Squaring Shears. For No. 20..	120 in.	Obilla	3800 lbs.	\$
Improved Automatic Back Gauge No. 2, in place of ordinary one .....		Oblidas	extra....	\$

### Power Squaring Shears

We make a large variety of Power Squaring Shears, from 2 to 14 feet long and of various capacities, some with solid housings, others with gap. Catalog of Power Shears will be cheerfully mailed to those in need of such machines. Inquiries should state the desired cutting length, kind and thickness of heaviest material to be cut.

## Niagara Lever Punches



No. 12



No. 22

Intended for punching small round holes. Adjustable back gauge regulates the distance from the holes to the edge of the sheet, and a stripper is applied.

NOS. 11-18. The lever works both ways, front or back.

CAPACITY:  $\frac{1}{4}$  inch hole through  $\frac{1}{4}$  inch iron or equivalent.

$\frac{3}{16}$  and  $\frac{1}{4}$  inch holes can be punched in angle iron, if the center of the hole is not less than  $\frac{1}{2}$  inch from the inner corner.

PRICE includes punches for holes  $\frac{1}{8}$ ,  $\frac{3}{16}$ , and  $\frac{1}{4}$  inch diameter, and one die to match.

If desired, punches of regular sizes will be furnished with prick center.

	Throat	Code Word	Weight	Price
No. 11 Niagara Lever Punch.....	4 inches	Orava	110 lbs.	\$13.50
No. 12 Niagara Lever Punch.....	6 inches	Orbavit	115 lbs.	15.00
No. 13 Niagara Lever Punch.....	10 inches	Orbical	135 lbs.	17.50
No. 14 Niagara Lever Punch.....	15 inches	Orbing	190 lbs.	20.00
No. 16 Niagara Lever Punch.....	25 inches	Orbit	390 lbs.	32.00
No. 18 Niagara Lever Punch.....	36 inches	Orblike	550 lbs.	40.00

NOS. 21-28. Can be operated with or without ratchet, according to the work. If used direct, the lever works both ways, and with the ratchet towards the back of the machine.

CAPACITY: Without ratchet,  $\frac{1}{2}$  inch hole through  $\frac{1}{4}$  inch iron or equivalent.

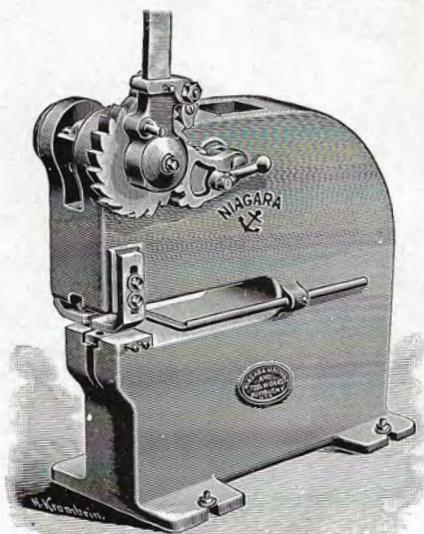
With ratchet,  $\frac{1}{2}$  inch hole through  $\frac{3}{8}$  inch iron or equivalent.

$\frac{1}{4}$  and  $\frac{3}{8}$  inch holes can be punched in angle iron, if the center of the hole is not less than  $\frac{1}{2}$  inch from the inner corner.

PRICE includes punches for holes  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$  inch diameter and one die to match. If desired, punches of regular sizes will be furnished with prick center.

	Throat	Code Word	Weight	Price
No. 21 Niagara Lever Punch.....	4 inches	Orcales	175 lbs.	\$22.00
No. 22 Niagara Lever Punch.....	6 inches	Orchata	240 lbs.	25.00
No. 23 Niagara Lever Punch.....	10 inches	Ordeloos	375 lbs.	30.00
No. 24 Niagara Lever Punch.....	15 inches	Ordimur	530 lbs.	40.00
No. 26 Niagara Lever Punch.....	25 inches	Ordinat	950 lbs.	60.00
No. 28 Niagara Lever Punch.....	36 inches	Ordnen	1675 lbs.	92.00

## Niagara Lever Punch No. 34



Intended for punching small round holes. Adjustable Back Gauge regulates the distance from the hole to the edge of the sheet, and a stripper is applied.

CAPACITY  $\frac{5}{8}$  inch hole through  $\frac{5}{8}$  inch iron, or equivalent.

PRICE includes punches for holes  $\frac{1}{2}$  and  $\frac{5}{8}$  inch diameter, and die to match. In doing heavy work with this machine the compound mechanism must be used.

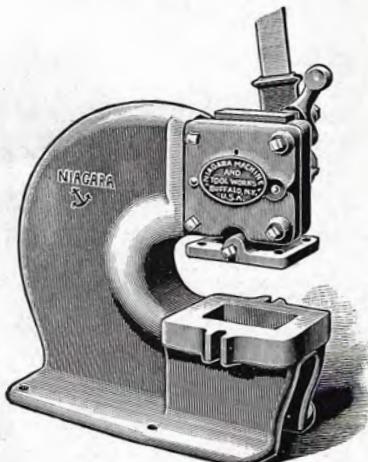
	Throat	Code Word	Weight	Price
No. 34 Niagara Lever Punch .....	15 inches	Orest	1300 lbs.	\$100.00

## No. 2 Niagara Lever Press

The slide has rectangular guides to insure true motion up and down, as required in punching square and irregular shaped holes.

For light work the machine can be operated direct; for heavier work the ratchet is used.

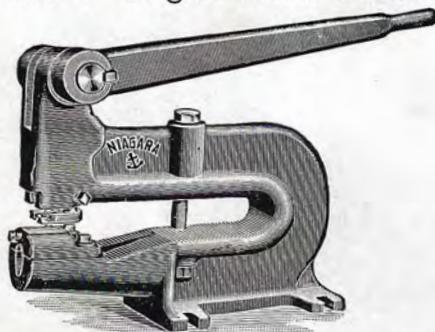
CAPACITY. Without ratchet,  $\frac{1}{2}$  inch hole through  $\frac{1}{4}$  inch iron or equivalent. With ratchet,  $\frac{1}{2}$  inch hole through  $\frac{3}{8}$  inch iron or equivalent.



NIAGARA LEVER PRESS		No. 2
Distance from center of slide to back .....	inches	6
Opening in bed .....	inches	5 x 5
Diameter of hole in slide .....	inches	1
Distance from bed to slide when up .....	inches	4 $\frac{1}{4}$
Stroke of slide .....	inches	$\frac{3}{4}$
Code word .....		Renfort
Shipping weight .....	lbs.	425
Price .....		\$45.00

Working parts are charged for extra, according to the size and shape of work, which should be fully explained.

## No. 44 Niagara Lever Punch



The round end of the base, in which the die is inserted, permits of punching holes in pipe  $4\frac{1}{4}$  inch diameter and larger, and up to 7 inches from the end. To stiffen the frame a stay bolt can be used.

**CAPACITY.** Without stay bolt, No. 12 iron, up to 15 inches from the edge.

With stay bolt, No. 9 iron, up to 7 inches from the edge.

**PRICE** includes punches and dies for holes  $\frac{1}{8}$ ,  $\frac{3}{16}$  and  $\frac{1}{4}$  inch diameter.

	Code Word	Weight	Price
No. 44 Niagara Lever Punch.....	Rengos	150 lbs.	\$18.00

## Niagara Power Punches



Principally intended for punching small round holes, but can also be arranged for small square and irregular holes.

**Adjustable Back Gauge** regulates the distance from the holes to the edge of the sheets, and a stripper is applied.

**CLUTCH.** The motion is controlled by a positive clutch actuated by foot treadle. It causes the slide to stop at the highest point after every stroke, unless the treadle is kept depressed.

**CAPACITY.**  $\frac{1}{4}$  inch hole through  $\frac{1}{4}$  inch iron, or the equivalent.

$\frac{3}{16}$  and  $\frac{1}{4}$  inch holes can be punched in angle iron, if the center of the holes is not less than  $\frac{1}{2}$  inch from the inner corner of the angle.

**PRICE** includes punches for holes  $\frac{1}{8}$ ,  $\frac{3}{16}$  and  $\frac{1}{4}$  inch diameter and die to match. Distance from bed to bottom of slide, when up.....  $2\frac{5}{8}$  inches

Stroke of slide.....  $\frac{1}{2}$  inch

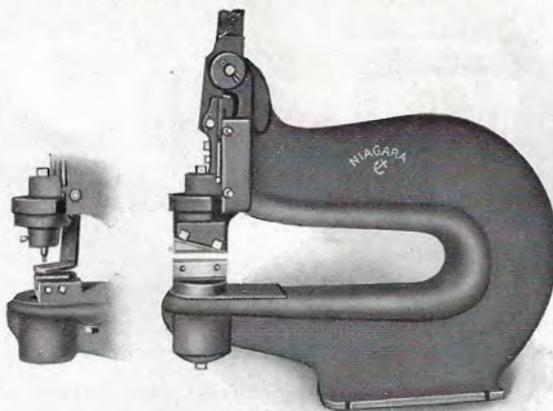
Hole in slide.....  $\frac{5}{8}$  inch dia., 1 inch deep

Size of flywheel..... 24 x 4 inches

Speed of flywheel..... 125 R. P. M.

NIAGARA POWER PUNCH	Throat	Code Word	Weight	Price
No. 122-A .....	6 inches	Orobus	660 lbs.	\$85.00
No. 124-A .....	15 inches	Orpheus	850 lbs.	95.00

## Niagara Deep Throat Lever Shears and Punches



The deep throat of the frame permits of cutting or punching holes in large sheets.

KNIVES are 4 inches long and have two cutting edges which can be used alternately.

They are arranged to swivel, to permit of cutting from back to front, right to left, or at any desired angle. The position of the knives can be changed quickly.

PUNCHING ATTACHMENT can be applied to the Shearing Machines, that shearing or punching can be done alternately. It consists of punch and die holders, stripper, punches and die for holes  $\frac{1}{8}$ ,  $\frac{1}{16}$  and  $\frac{1}{4}$  inch diameter.

Nos. 55 to 58 will cut  $\frac{1}{8}$  inch iron and lighter.

Will punch  $\frac{1}{4}$  inch hole through  $\frac{1}{8}$  inch iron, or the equivalent.

No. 66 will cut  $\frac{1}{16}$  inch iron and lighter.

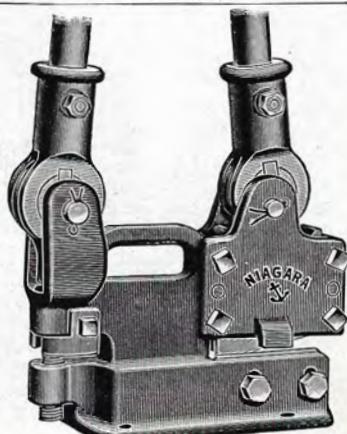
Will punch  $\frac{1}{4}$  inch hole through  $\frac{1}{4}$  inch iron, or the equivalent.

	Throat	Code Word	Shipping Weight	Price
No. 55 Lever Shears .....	18 inches	Oruga	315 lbs.	\$35.00
No. 56 Lever Shears .....	24 inches	Osage	410 lbs.	40.00
No. 58 Lever Shears .....	36 inches	Ostrit	550 lbs.	75.00
No. 66 Lever Shears .....	24 inches	Osunos	550 lbs.	50.00
No. 55 Lever Punch .....	18 inches	Orzella	315 lbs.	35.00
No. 56 Lever Punch .....	24 inches	Osannier	410 lbs.	40.00
No. 58 Lever Punch .....	36 inches	Oswin	550 lbs.	75.00
No. 66 Lever Punch .....	24 inches	Otanto	550 lbs.	50.00
Punching Attachment (Code word Osburga), extra.....				10.00

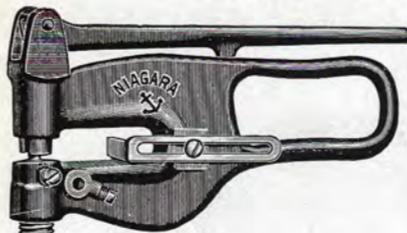
### No. 31 Combined Punch and Shears—Steel Frame

Made entirely of steel, to combine great strength with small weight. The frame is offset to permit of cutting apart sheets of any length and width.

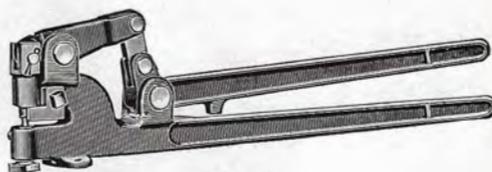
COMBINED PUNCH AND SHEARS	No. 31
Will cut iron in thickness up to .....	$\frac{1}{8}$ inches
Length of knives .....	3 inches
Will punch .....	$\frac{1}{4}$ thr. $\frac{1}{8}$ inches
Throat of punch .....	$1\frac{1}{2}$ inches
Dies and punches for holes in diameter .....	$\frac{1}{4}$ , $\frac{3}{16}$ , $\frac{1}{8}$ inches
Weight .....	27 lbs.
Price .....	\$16.00



## Portable Lever Punches—Steel Frame



No. 1



No. 2

These are handy tools. Made entirely of steel to combine strength with the least possible weight. Back and side gauges are provided.

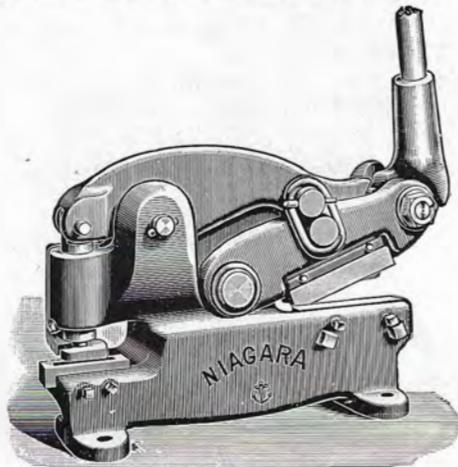
**CAPACITY.** No. 1,  $\frac{1}{4}$  inch hole through No. 18 iron, or equivalent. Throat, 3 inches deep. No. 2,  $\frac{1}{4}$  inch hole through  $\frac{3}{8}$  inch iron, or equivalent. Throat,  $1\frac{3}{4}$  inches deep.

Will punch angle iron, if the distance from center of hole to the inner corner of the angle is not less than  $\frac{1}{2}$  inch.

**PRICE** includes punches and dies for holes  $\frac{1}{8}$ ,  $\frac{3}{16}$  and  $\frac{1}{4}$  inch diameter.

	Code Word	Weight	Price
No. 1 Portable Lever Punch .....	Renilla	5 lbs.	\$4.00
No. 2 Portable Lever Punch .....	Renilist	14 lbs.	8.00

## Combined Shears and Punches



No. 2

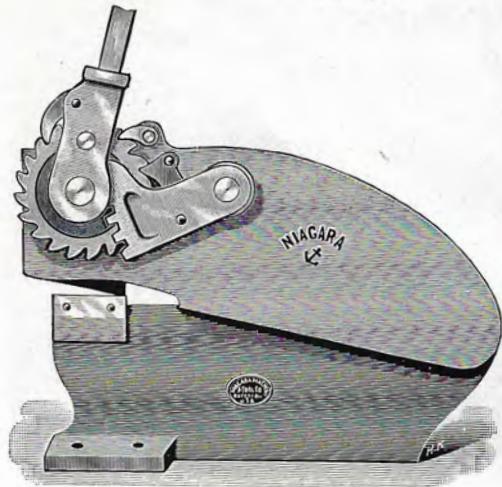
Suitable for cutting apart sheets of any length and width and for punching round holes of small diameter.

Nos. 2 and 3. The lever works towards the operator when he stands on either end, in shearing as well as punching.

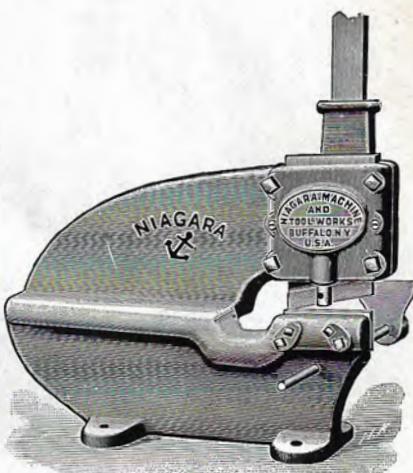
No. 224 has separate levers for the punch and shear parts.

COMBINED SHEARS AND PUNCHES	No. 2	No. 3	No. 224
Will cut iron in thickness .....	$\frac{1}{8}$ inch	$\frac{3}{16}$	$\frac{3}{8}$
Length of knives .....	inches	$8\frac{1}{2}$	5
Will punch (or equivalent) .....	inch	$\frac{1}{4}$ thr. $\frac{3}{16}$	$\frac{1}{2}$ thr. $\frac{3}{8}$
Throat of punch part .....	inches	$3\frac{1}{2}$	6
Die and punches for holes .....	inch	$\frac{1}{8}$ , $\frac{3}{16}$ , $\frac{1}{4}$ , $\frac{5}{16}$ , $\frac{3}{8}$	$\frac{3}{8}$ , $\frac{1}{2}$
Code word .....		Ortica	Ortul
Weight .....	lbs.	150	550
Price .....		\$22.00	\$80.00

## Niagara Lever Shears



No. 15



No. 13

Suitable for cutting apart sheets of any length and width.

The lever works towards the front, and one operator can actuate the machine. The knives are adjustable for wear. The holdown attachment prevents the material from rising while being cut, and an adjustable gauge is provided.

Nos. 13 to 15 are operated direct for iron not to exceed  $\frac{1}{4}$  inch in thickness.

Nos. 14 and 15 must be used with ratchet for iron  $\frac{1}{4}$  to  $\frac{3}{8}$  inch thick.

No. 15 must be operated with compound lever for iron from  $\frac{3}{8}$  to  $\frac{1}{2}$  inch thick. The frame of this machine carries a spring device that crowds between the two parts of the sheet and holds them apart at the up stroke, to facilitate moving the sheet forward for each cut.

NIAGARA LEVER SHEARS	Will Cut in Thickness	Length of Knives	Code Word	Weight	Price
No. 13 .....	$\frac{1}{4}$ inch	$4\frac{1}{2}$ in.	Oscrem	300 lbs.	\$32.00
No. 14 .....	$\frac{3}{8}$ inch	5 in.	Osteal	480 lbs.	46.00
No. 15 .....	$\frac{1}{2}$ inch	6 in.	Ostiak	800 lbs.	85.00
Iron Legs for Nos. 13 and 14, extra .....					5.00
Iron Legs for No. 15, extra .....					10.00

## Scroll Shears

For No. 20 Iron and Lighter

Will cut ovals, ogees and irregular shapes.

No. 2 has the knives at right angles to the frame.

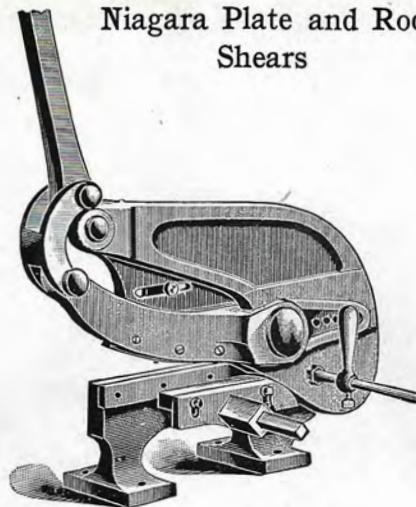
Distance from knives to frame,  $11\frac{1}{2}$  inches.

Length of knives,  $4\frac{1}{2}$  inches.



	Code Word	Shipping Weight	Price
No. 1 Scroll Shears .....	Renonce	80 lbs.	\$22.00
No. 2 Scroll Shears .....	Reform	80 lbs.	24.00

## Niagara Plate and Rod Shears



Operated by powerful toggle mechanism, and adapted to cutting apart sheets of any length and width, as well as bars.

Adjustable gauges for cutting sheets and rods are applied. A holdown prevents the sheet from rising while being cut.

The inserted dies for cutting rods are of tool steel and hardened.

PLATE AND ROD SHEARS	No. 1	No. 2	No. 3
Length of knives .....	inches	10	10
Will cut plate iron up to .....	inches	$\frac{1}{8}$	$\frac{1}{16}$
Will cut flat iron up to .....	inches	$\frac{1}{4} \times 3$	$\frac{5}{16} \times 3$
Will cut round iron up to .....	inches	$\frac{1}{2}$	$\frac{5}{8}$
Weight .....	lbs.	165	220
Code word .....		Osdara	Osiride
Price .....		\$38.00	\$42.00
Iron Legs, extra .....		\$5.00	\$5.00

### Plate and Rod Shears with Corrugated Knives

In place of the straight knives, we can furnish these Shears with knives shaped to suit corrugated sheets to permit of cutting across corrugated material.

### Wire and Rod Cutters

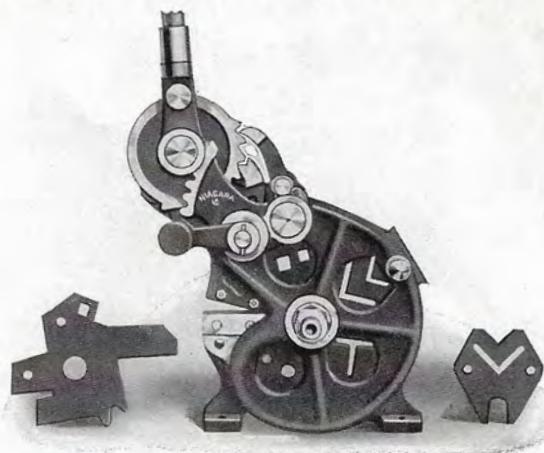


No. 5

These are handy tools for cutting round wire and bars. They have an adjustable gauge.

WIRE AND ROD CUTTERS	Holes in Die	Code Word	Weight	Price
No. 0 .....	$\frac{1}{8}$ , $\frac{3}{16}$ , $\frac{1}{4}$ inch diam.	Renntag	5 lbs.	\$ 4.50
No. 3 .....	$\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ inch diam.	Rennziel	55 lbs.	14.00
No. 5 .....	$\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ inch diam.	Renome	110 lbs.	28.00
No. 8 .....	$\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ , 1, $1\frac{1}{8}$ in. dia.	Renando	350 lbs.	60.00

## Universal Shears for Profiles and Bars



Intended for cutting angle and T Iron, round, square and flat bars.

The frame consists of two parts, made of steel castings, with inserted tool steel dies. One of the two parts is stationary, while the other can be given a limited rotary motion around the center pivot.

The angle iron cutters are removable to permit of substituting others for angles of smaller sizes, or for different shapes; the cutters for T iron, also for round and square bars, are fixed.

The machine has a compound mechanism used for heavier work, or it can be operated direct, with greater speed, in cutting lighter stock.

Holddown plates on the side of the machine hold and guide the stock while being cut off.

DIES are furnished for

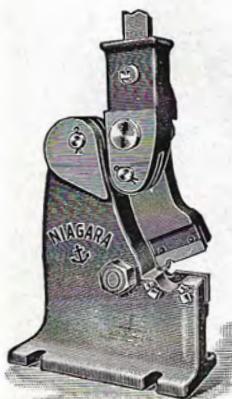
Angle iron— $2\frac{1}{2} \times \frac{3}{8}$  inches  
Angle iron— $2 \times \frac{1}{4}$  inches  
T iron— $2\frac{1}{2} \times \frac{3}{8}$  inches

Round Bars— $\frac{3}{4}$  and 1 inch.  
Square Bars— $\frac{3}{4}$  and 1 inch.  
Straight Knives— $4\frac{1}{2} \times \frac{5}{8}$  inch flat.

	Code Word	Weight	Price
Universal Shears for Profiles and Bars.....	Ostion	360 lbs.	\$125.00

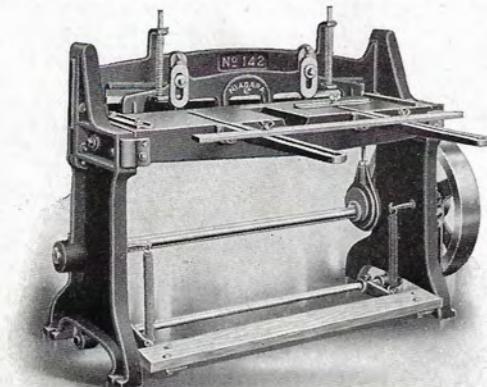
## No. 4 Niagara Bar Shears

This machine has a powerful toggle movement. It is usually furnished with straight knives, and knives for cutting angle iron can be substituted.

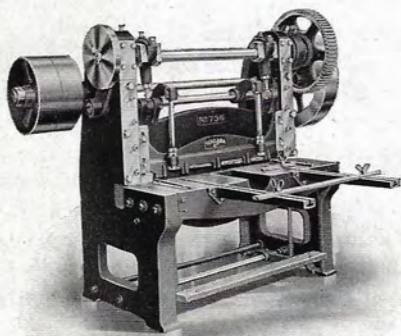


BAR SHEARS	No. 4
Will cut round iron in diameter up to..... inches	$\frac{7}{8}$
Will cut flat iron up to diameter..... inches	$\frac{3}{8} \times 2$
Length of knives .....	$3\frac{3}{4}$
Weight .....	180
Price, No. 4 Bar Shear with straight knives.....	\$36.00
Code word .....	Ostraco
Price with knives for angle iron $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$ inch.	\$40.00

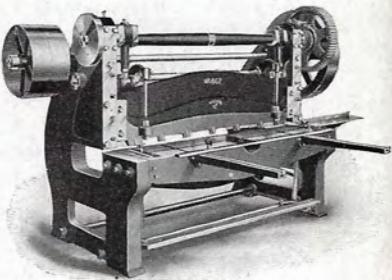
## Niagara Power Squaring Shears



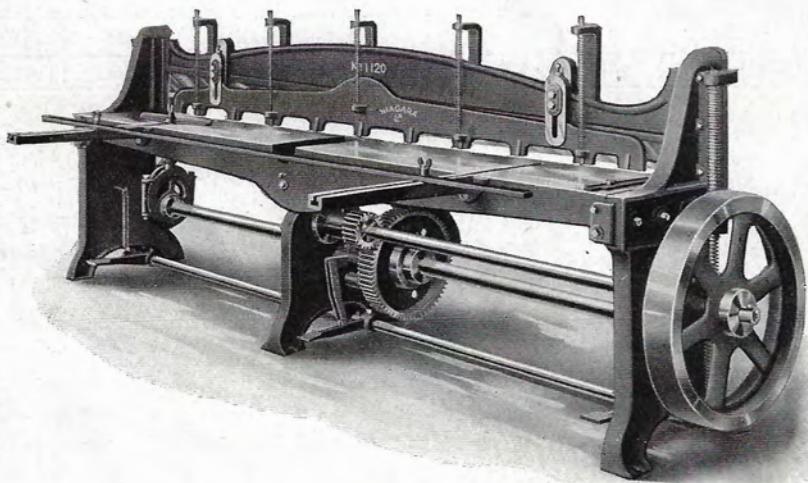
No. 142



No. 736

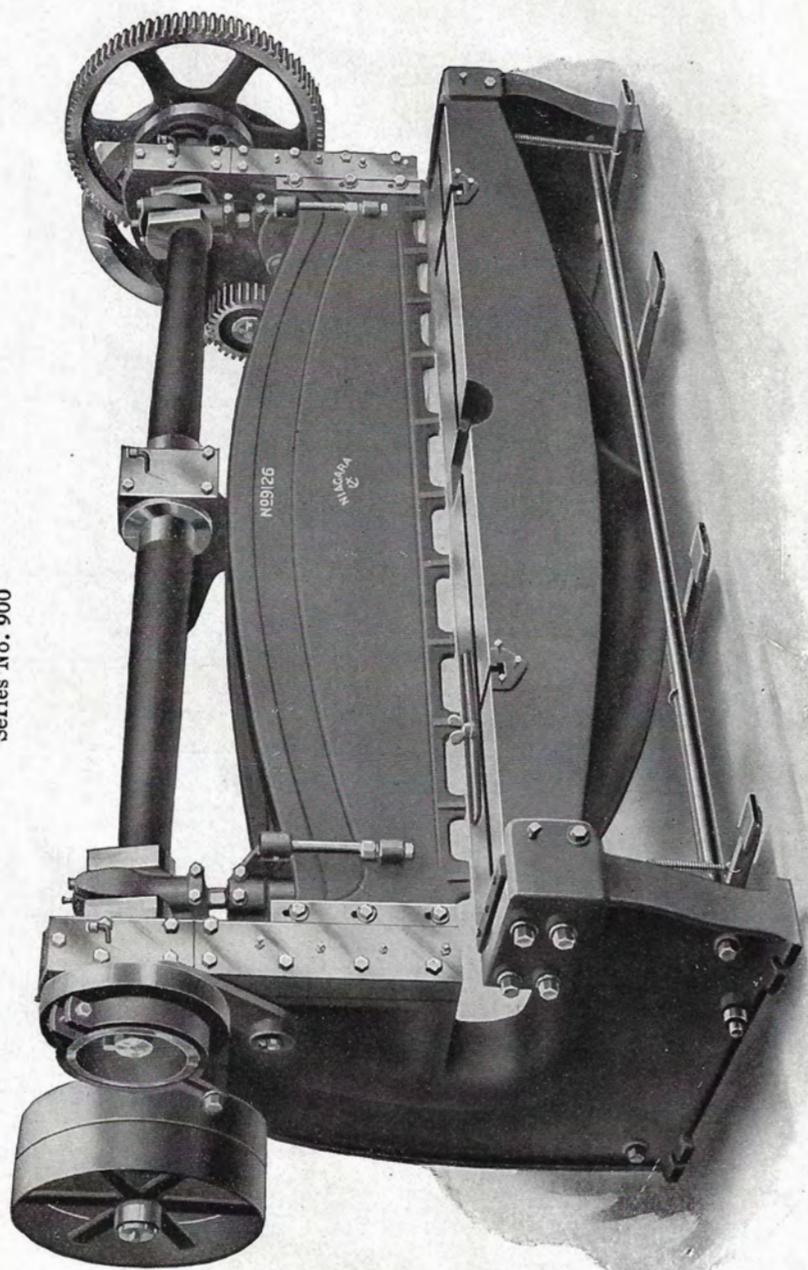


No. 862



No. 1120

Niagara Power Squaring Shears  
Series No. 900



No. 9126

## Niagara Power Squaring Shears

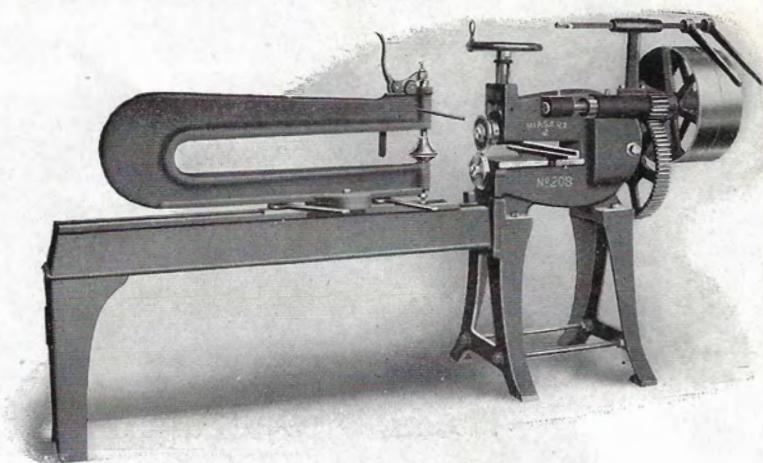
These Shears are the result of long and extensive experience and they embody all valuable features. The motion is controlled by an excellent clutch. All gears are machine cut and we furnish holddown and a full set of front, back, bevel and side gauges. Shears No. 300 series and heavier have overhead drive, double crank shaft forged of steel, and positive holddown, cam actuated.

Cutting Length	Inches	30	36	42	52	62	72	96	120	132	144
FOR NO. 22 AND LIGHTER. Solid housings, spring holddown.	Number Weight, lbs.	30 600		42 900							
FOR NO. 18 AND LIGHTER. Solid housings, spring holddown.	Number Weight, lbs.	130 950	136 1200	142 1350	152 1600	162 1800	172 2000	196 3800	1120 4700	1132 5000	1144 5300
FOR NO. 14 AND LIGHTER. Solid housings, spring holddown, back geared.	Number Weight, lbs.	230 1400	236 1600	242 1800	252 2100	262 2400	272 2700	296 5500	2120 6500	2132 7000	2144 7600
FOR NO. 16 AND LIGHTER. 15-inch gap, overhead drive, not geared, spring holddown.	Number Weight, lbs.	530 1900	536 2100	542 2300	552 2600	562 2900					
FOR $\frac{1}{8}$ INCH AND LIGHTER. 1 inch gap, overhead drive, back geared, cam holddown, T & L pulleys.	Number Weight, lbs.	330 3000	336 3200	342 3500	352 3800	362 4400	372 6000	396 7600	3120 8800	3132 9800	3144 10500
FOR $\frac{1}{8}$ INCH AND LIGHTER. 15 inch gap, overhead drive, back geared, cam holddown, T & L pulleys.	Number Weight, lbs.	630 3700	636 3900	642 4200	652 4500	662 5200	672 7000	696 8500	6120 9800	6132 10800	6144 11500
FOR $\frac{3}{16}$ INCH AND LIGHTER. 1 inch gap, overhead drive, back geared, cam holddown, T & L pulleys.	Number Weight, lbs.	736 4700		748 (48-in.) 5100	762 6000	772 7000	796 10000	796 13000	7120 14000	7132 14000	
FOR $\frac{3}{16}$ INCH AND LIGHTER. 15 inch gap, overhead drive, back geared, cam holddown, T & L pulleys.	Number Weight, lbs.	836 5700		848 (48-in.) 6100	862 7000	872 7800	896 11000	896 14000	8120 15000	8132 15000	
FOR $\frac{1}{4}$ INCH AND LIGHTER. 18 inch gap (No. 942, 15 inch gap), cam holddown, T & L pulleys.	Number Weight, lbs.		942 8600		962 14000		996 19000	996 21000	9126 (12 <sup>1</sup> / <sub>2</sub> -in.) 21000	9168 (16 <sup>1</sup> / <sub>2</sub> -in.) 30000	

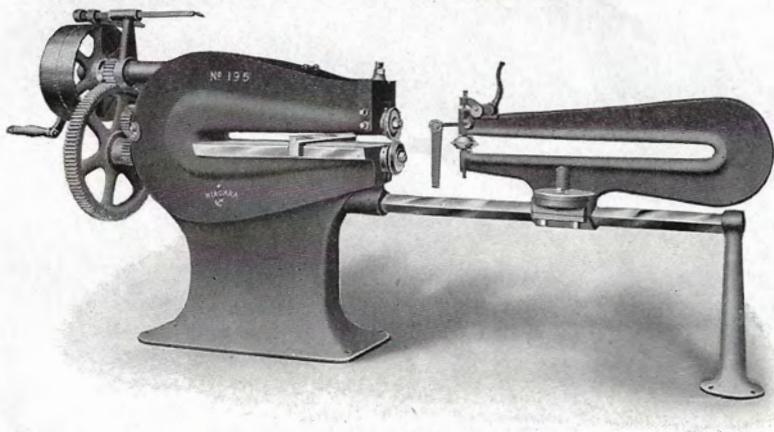
Gap Shears Nos. 500, 600, 800 and 900 series can be furnished with deeper gap, at extra charge. If interested, send for Shear Catalog.

## Niagara Circle and Slitting Shears

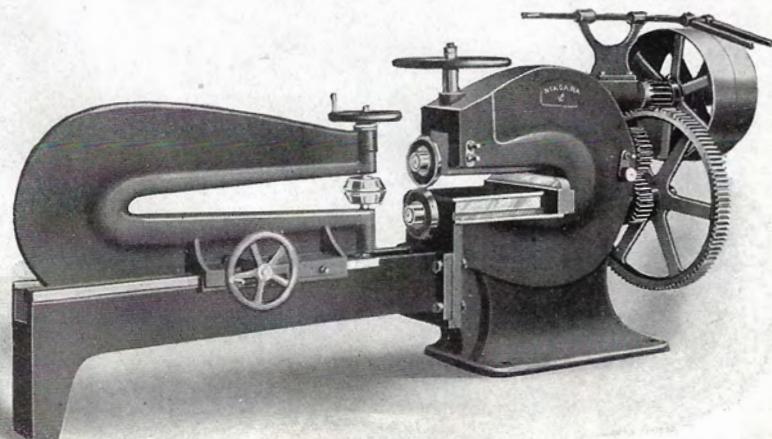
For Power



No. 208

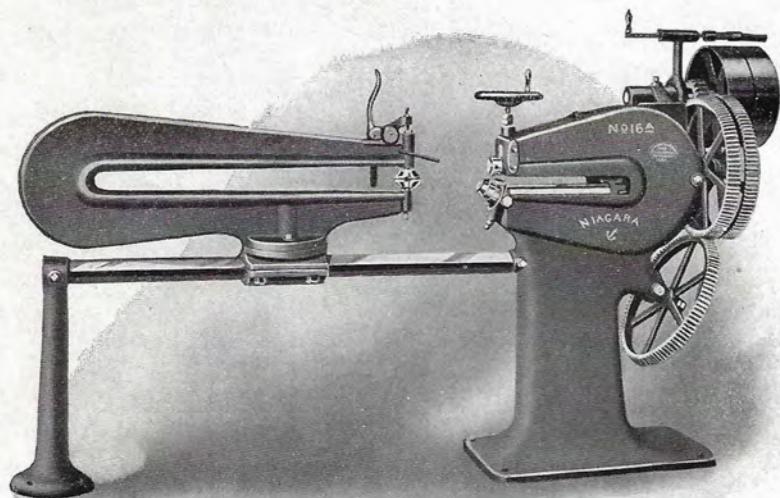


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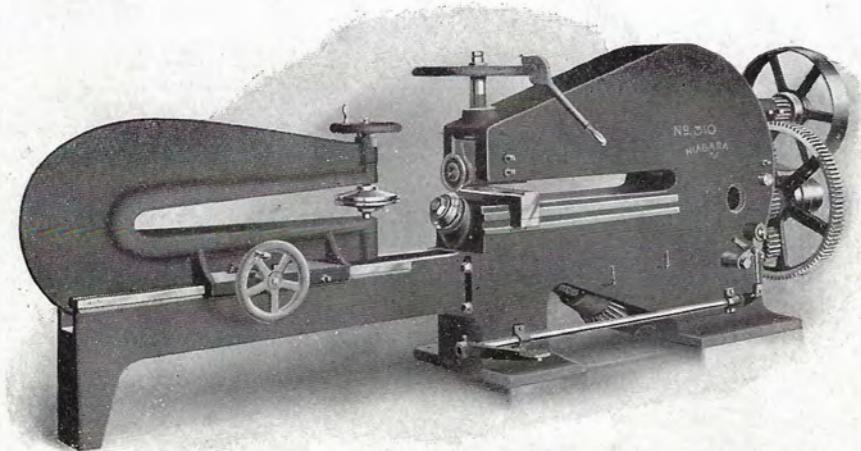


No. 407

## Niagara Ring and Circle Shears



No. 16A



No. 310

## Niagara Circle and Slitting Shears

For cutting sheet metal into circular shape, and strips. Will cut outside circle only.

CUTTING HEAD for slitting sheets can be furnished separately.

CUTTERS are made of a special quality of high grade tool steel, properly hardened and ground. Adjustment is provided to take up wear on the cutters and for the thickness of material.

SLITTING GAUGE in the cutting head is readily adjustable for strips of various widths.

CIRCLE ARM has a throat of sufficient depth to permit of cutting the largest circles for which a machine is recommended from square blanks. The proper position of the blank is determined by a swinging gauge and the cutters.

Number .....	For Bench				On Legs	
	02	04	05	06	08	195
Capacity.....gauge	20	20	18	18	16	10
Will circle.....inches	3-22	3 $\frac{1}{2}$ -48	4-48	4-48	6-60	8-60
Throat of cutting head to frame.inches	9 $\frac{3}{4}$	9 $\frac{3}{4}$	13	18 $\frac{1}{2}$	31	36 $\frac{1}{2}$
Throat of cutting head to gauge.inches	9	9	12 $\frac{1}{2}$	18	30 $\frac{1}{2}$	34 $\frac{1}{2}$
Throat of circle arm.....inches	16	34	36	36	42	44
Weight of Circle Shears .....	lbs.	240	350	500	640	1700
Weight of Slitting Shears .....	lbs.	150	250	340	1100	3100

Number .....	205	206	207	208	407	410
Capacity.....gauge	12	12	10	8	$\frac{1}{4}$ -inch	$\frac{1}{4}$ -inch
Will circle in diameter .....	inches	8-36	8-53	8-60	8-53	14-60
Throat of cutting head to frame.inches	13	16	25 $\frac{1}{2}$	16 $\frac{1}{2}$	25	49 $\frac{1}{2}$
Throat of cutting head to gauge.inches	12 $\frac{1}{2}$	15 $\frac{1}{2}$	24 $\frac{1}{2}$	16	23	47 $\frac{1}{2}$
Throat of circle arm.....inches	26	38	44	38	42	42
Weight of Circle Shears .....	lbs.	1450	1600	2850	2300	6000
Weight of Slitting Shears .....	lbs.	650	750	1600	1250	3800
						7500

## Niagara Ring and Circle Shears

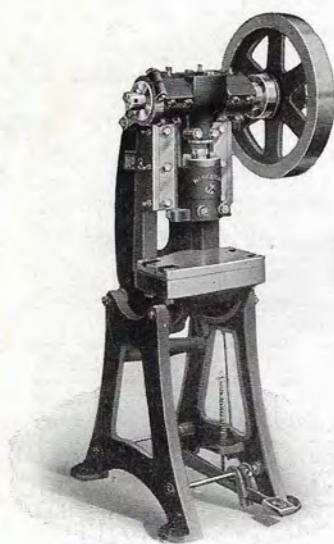
Suitable for cutting holes or internal circles and irregular curves owing to the inclined position of the lower shaft and cutter. Also adapted to cutting outside circles, the same as Circle Shears with parallel shafts. Nos. 11A and 13A are for bench use.

Number .....	11A	13A	15A	16A	17	19	307	310
Capacity.....gauge	22	22	18	14	10	12	$\frac{1}{4}$ -inch	$\frac{1}{4}$ -inch
Will circle in diameter .....	inches	3 $\frac{1}{2}$ -22	3 $\frac{1}{2}$ -42	5-48	6-60	10-60	8-60	14-60
Throat of cutting head to frame.inches	9 $\frac{1}{4}$	9 $\frac{1}{4}$	18 $\frac{1}{2}$	18	24 $\frac{1}{2}$	36 $\frac{1}{2}$	25	49 $\frac{1}{2}$
Throat of cutting head to gauge.inches	9	9	17 $\frac{1}{2}$	16 $\frac{1}{2}$	23 $\frac{1}{2}$	34 $\frac{1}{2}$	23	47 $\frac{1}{2}$
Throat of circle arm.....inches	16	30	36	42	44	44	42	42
Weight of Circle Shears .....	lbs.	220	330	1000	1700	3500	3200	5200
Weight of cutting head.....	lbs.			700	1200	2300	2600	3200
								7600

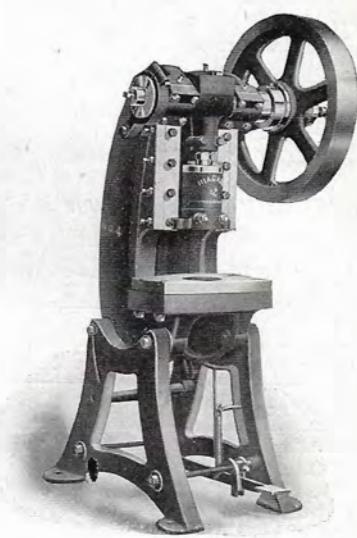
If interested, send for Shear Catalog

# Niagara Inclinable Power Presses

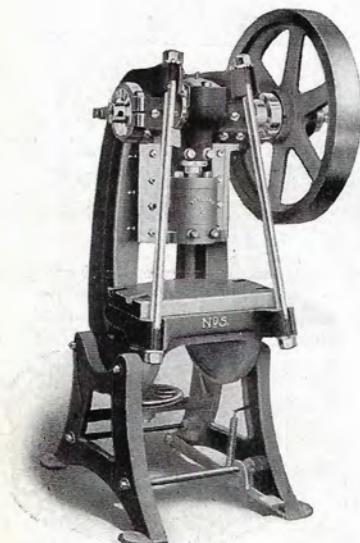
Series No. 1



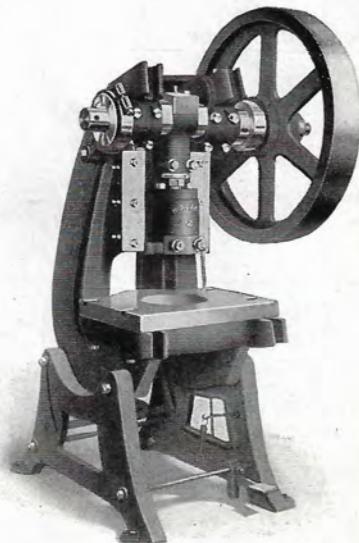
No. 3



No. 4



No. 5 with Stay Rods



No. 6

## Niagara Inclinable Power Presses

### Series No. 1

In workmanship, convenience and durability these Presses are unsurpassed, and the range of work for which they are suitable is unlimited. The outlines are pleasing, the proportions right, and the material properly distributed. The wearing surfaces are large, and all parts well fitted. CLUTCH. A positive clutch of excellent construction controls the motion.

FLY WHEEL on plain Presses has a long bronze-bushed bearing, and means are provided for continuous lubrication.

SHAFT is heavy, forged of steel, ground true in the bearings and with large crank pin. The clutch collar is forged solid on the shaft.

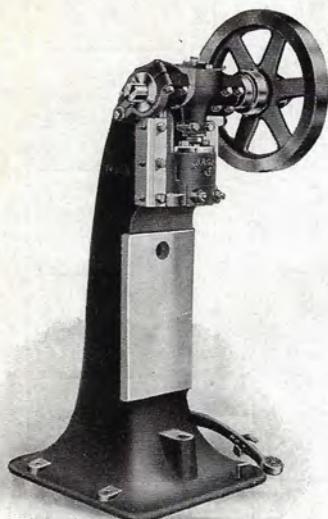
Plain Press	NUMBER	2 for bench	3	4	4 1/2	5	5 1/2	6	6A	7
Code Word		Sabaco	Sabedor	Sabinar	Sabintor	Sablage	Sablator	Saboga	Sabotor	Sabres
Opening in bed, rectangular part.....	4 1/2 x 6	4 1/2 x 8	6 x 10	8 x 11	8 x 12	10 x 15	14 x 14	14 x 15	14 x 14	24 x 25
Opening in bed, circular part.....	5	6	8	9	10	12	12	9	9	15
Distance from center of slide to back.....	4	4 1/4	5	6 1/2	6	7 1/2	9	14	14	20
Width of opening in back of Press.....	6 3/8	7	8 1/2	9 1/2	12	13	10 1/2	10 1/2	12 3/4	12 1/2
From bed to slide, when up.....	6	7 1/4	8 1/4	9 1/2	9 1/4	10 1/2	3	3	3	3
Stroke of slide, standard.....	1 1/4	1 1/2	2	2	2 1/2	4 1/2	5	5	5	6
Stroke of slide, maximum.....	2	3 1/2	4	4	4 1/2	4 1/2	5	5	5	6
Adjustment of slide.....	2	2	2 1/2	2 1/2	2	3	3	3	3	3
Usual hole in slide, square.....	1 1/2	1 1/2	2 1/2	2 1/2	2	2	2	2	2	2
Area top of bolster-plate.....	7 1/4 x 15	9 x 15	10 3/4 x 19	12 x 19	14 3/4 x 24	17 x 24	19 x 27	19 x 27	19 x 27	30 x 29
Thickness of bolster-plate.....	7/8	1 1/4	1 3/4	1 3/4	2 1/4	2 1/4	3 1/4	3 1/2	3 1/2	4 1/4
Diameter of shaft, in bearings.....	2	2 1/4	2 1/2	2 1/2	2 3/4	3	3	3	3	3
Floor space, F to B-R to L.....	20 x 26	34 x 30	38 x 34	38 x 36	44 x 40	44 x 42	49 x 45	49 x 45	49 x 45	63 x 50
Height to center of shaft.....	26 3/4	54	58	60	61	63	63	65	65	72
Size of fly wheel.....	18 x 2 1/2	22 x 3	28 x 4	30 x 4 1/2	34 x 5	34 x 5	40 x 6	40 x 6	40 x 6	45 x 7
Weight of fly wheel.....	100	175	280	375	500	600	750	750	750	1100
Speed of fly wheel.....	125	120	110	100	100	100	90	90	90	85
Weight .....	500	1000	1500	2000	2700	3000	4000	4200	4200	7000
Geared Press	NUMBER		4	4 1/2	5	5 1/2	6	6A	7	
Code Word			Sabusto	Sabutor	Sacapit	Sacator	Sacello	Sacelot	Sachar	
Size of fly wheel.....			18 x 2 1/2	20 x 3	20 x 3	20 x 3	25 x 4	25 x 4	30 x 5	
Weight of fly wheel.....			130	175	175	175	275	275	500	
Speed of fly wheel.....			390	390	390	390	360	360	300	
Size of pulley.....			18 x 2 1/2	20 x 3	20 x 3	20 x 3	25 x 4	25 x 4	30 x 5	
Ratio of gearing.....			6:1	6:1	6:1	6:1	6:1	6:1	6:1	
Strokes per minute.....			65	65	65	65	60	60	50	
Weight .....			1650	2200	2850	3200	4200	4400	4400	7300

Bolster-plate with bolts and wrenches, also knockout in slide, are included in the price.

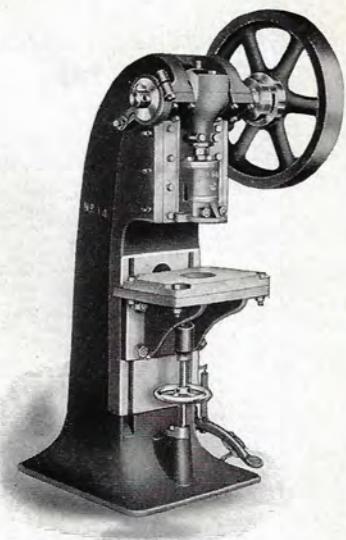
Stroke varying from standard and other modifications are charged for extra.

## Niagara Power Presses

Series No. 10

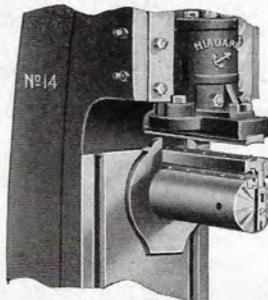


No. 13 with Horn Hole, no Table



No. 14 with Screw Adjusting Table

### Side Seaming Attachments



Duplex Side Seamer

Intended for making lock seams on sheet metal cylinders, etc. The folding and closing operations are performed successively, at the same handling.

**DUPLEX SIDE SEAMER.** The folding operation is done under the lower part of the auxiliary slide attached to the horn, and the closing operation on the upper surface of this slide. The smallest diameter of the work is limited by the height of the horn and auxiliary slide, when apart.

Each Duplex Side Seaming Attachment is fitted for a given thickness of material and width of seam. The seam can be either towards the inside or outside, as may be ordered.

DUPLEX SIDE SEAMER	No. 13	No. 14	No. 15
Smallest diameter of work .....	inches	4	5
Extreme length of work .....	inches	10	16
Extreme thickness of material .....	Nos.	28	26
Code word .....		Sadiora	Sadocus
			Safaria

## Niagara Power Presses

### Series No. 10

These Presses are intended for general purposes, where a variety of work is to be taken care of with the same machine.

**ADJUSTABLE TABLE** allows considerable variation in the height of the die space.

The adjusting screw serves also to support the table. The table is fastened to the frame by means of four bolts, and can be removed entirely. If adjustment of the die space is not required, the adjusting screw can be omitted, and the table dowled to the frame in a fixed position.

**WIRING FRAME AND SLIDING BOLSTER** can be provided on the adjustable table for operating wiring dies.

**HORN HOLE** in the frame permits of inserting horns or anvils for riveting, lock seaming, etc.

PLAIN PRESS	No. 12 for bench	No. 13	No. 14	No. 15
Opening in bed, rectangular part .....inches	4 x 6	6 x 6	7 x 7	10 x 11
Opening in bed, circular part.inches	5			
Distance from center of slide to back .....inches	4	5½	8	10
From bed to slide, when up, standard stroke .....inches	6½	5 to 16	5½ to 16	6 to 15½
Stroke of slide, standard ....inches	1¼	1½	2	2½
Stroke of slide, maximum ...inches	2	3½	4	4½
Adjustment of slide.....inches	2	2	2½	3
Usual hole in slide, square...inches	1½	1½	2	2
Area top of table.....inches	7 x 11	10 x 15	12 x 18½	17½x19½
Diameter of shaft,in bearings.inches	2	2¼	2½	3
Floor space, F to B—R to L..inches	27 x 27	35 x 33	44 x 35	46 x 40
Height to center of shaft ....inches	26½	54	60	63
Size of fly wheel.....inches	18 x 2½	22 x 3	28 x 4	34 x 5
Weight of fly wheel..... lbs.	100	175	280	500
Speed of fly wheel ..... rev.	125	120	110	100
Weight complete ..... lbs.	600	1400	2700	4300
Code word	{ with fixed table ..... with screw adjusting table. without table .....	Sagmis	Sagrist	Sagumbo
			Sailor	Saintly
		Salada	Salband	Saldar
				Sahorna Sakerlot Salebra

Bolster-plate is not furnished with these Presses, unless ordered.

## No. 101 Niagara Power Press



Intended for light blanking, punching and forming operations, for jewelers' use, etc. Its efficiency excels by far that of a Foot Press. The crank shaft is a steel forging with solid eccentric to actuate the slide, which has long "V" bearings.

Fine and accurate adjustment of the slide can be made by means of R. and L. screw. CLUTCH of simple and durable construction controls the motion.

BRAKE consists of a round piece of fibre bearing against the circumference of the clutch collar.

DIE HOLDER, accommodating dies up to  $2\frac{1}{4}$  inches wide and  $3\frac{1}{4}$  inches long, is furnished. The holder carries a removable die shoe suitable for smaller dies. The die holder is fastened to the bed of the Press by means of two clamps secured by bolts, that can be adjusted laterally in "T" slots of the bed. There is an iron drawer under the table to receive punchings.

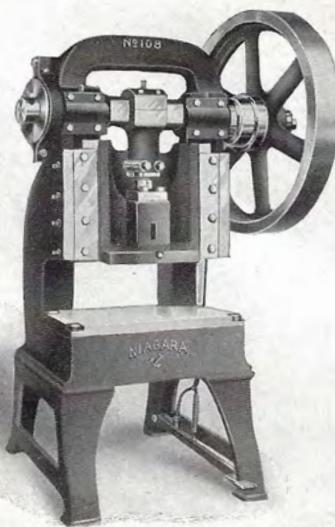
Number . . . . .	101
Code word . . . . .	Sackful
Opening in bed, round . . . . .	inches 3
Distance from center of slide to back . . . . .	inches $3\frac{3}{4}$
Width of opening in back of Press . . . . .	inches $5\frac{1}{4}$
From bed to slide when up, standard stroke . . . . .	inches 6
Stroke of slide . . . . .	inches 1
Adjustment of slide . . . . .	inches $1\frac{1}{4}$
Usual hole in slide, round . . . . .	inches 1
Area top of table . . . . .	inches $6 \times 12$
Diameter of shaft, in bearings . . . . .	inches $1\frac{3}{8}$
Floor space, F to B—R to L . . . . .	inches $23 \times 24$
Height to center of shaft . . . . .	inches 49
Size of fly wheel . . . . .	inches $14 \times 2\frac{1}{4}$
Weight of fly wheel . . . . .	lbs. 35
Speed of fly wheel . . . . .	rev. 125
Weight . . . . .	lbs. 380

Die holder is included in price.

Automatic Roll and other Feeds can be applied for light automatic work.

# Niagara Power Presses

## Series No. 100



The details of construction of these Presses are practically the same as those of our Inclinable Presses, series No. 1, except that the gibbs are central with the slide. Presses No. 100 series are furnished either for permanent upright or inclined position, not adjustable for both.

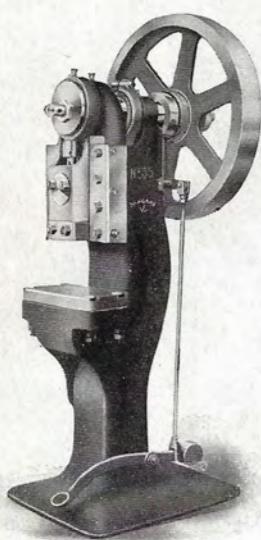
PLAIN PRESS	No. 107	No. 108	No. 109
Code word . . . . .	Saconite	Sacras	Sacrasto
Opening in bed, rectangular part . . . . . inches	13 x 25	13 x 27	12 x 22
Opening in bed, circular part . . . . . inches	16	16	16
Distance from center of slide to back . . . . . inches	9 $\frac{1}{2}$	13	9
Width of opening in back of Press . . . . . inches	22 $\frac{1}{2}$	24	22
From bed to slide, when up, standard stroke . . . . . inches	10 $\frac{1}{2}$	13	14
Stroke of slide, standard . . . . . inches	3	3	3
Stroke of slide, maximum . . . . . inches	5	6	6
Adjustment of slide . . . . . inches	3	4	4
Usual hole in slide, square . . . . . inches	3	3	3
Area top of bolster-plate . . . . . inches	18 $\frac{1}{2}$ x 33 $\frac{1}{2}$	25 $\frac{1}{2}$ x 37	20 x 32
Thickness of bolster-plate . . . . . inches	3	3	3
Diameter of shaft, in bearings . . . . . inches	4 $\frac{1}{4}$	5	5 $\frac{3}{4}$
Floor space, F to B—R to L . . . . . inches	45 x 50	62 x 79	68 x 60
Height to center of shaft . . . . . inches	69	77	82
Size of fly wheel . . . . . inches	45 x 7	50 x 8	60 x 9
Weight of fly wheel . . . . . lbs.	1100	1500	1900
Speed of fly wheel . . . . . rev.	85	80	80
Weight . . . . . lbs.	6000	9500	12000

GEARED PRESS	No. 107	No. 108	No. 109
Code word . . . . .	Sacudo	Sadala	Sadator
Size of fly wheel . . . . . inches	30 x 5	35 x 6	40 x 7
Weight of fly wheel . . . . . lbs.	500	750	1100
Speed of fly wheel . . . . . rev.	300	280	260
Size of pulley . . . . . inches	30 x 5	35 x 6	32 x 7
Ratio of gearing . . . . .	6:1	7 $\frac{1}{2}$ :1	7 $\frac{1}{2}$ :1
Strokes per minute . . . . .	50	40	35
Weight . . . . . lbs.	6500	11000	13500

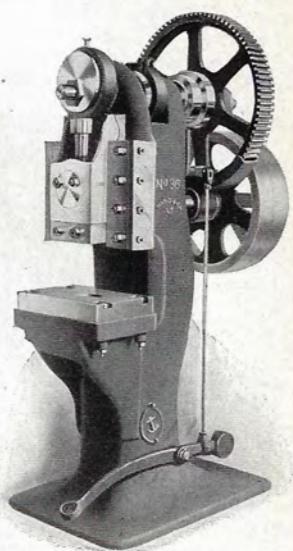
Bolster-plate with bolts and wrenches are included in the price.  
Stroke varying from standard and other modifications are charged for extra.

# Niagara Power Punching Presses

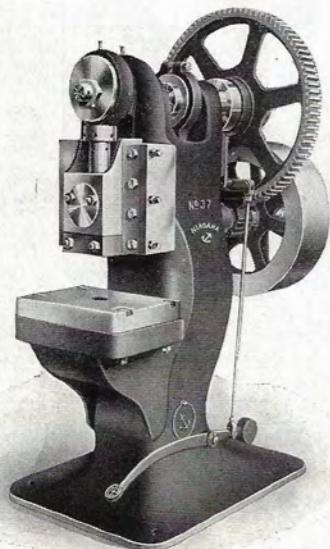
Series No. 30



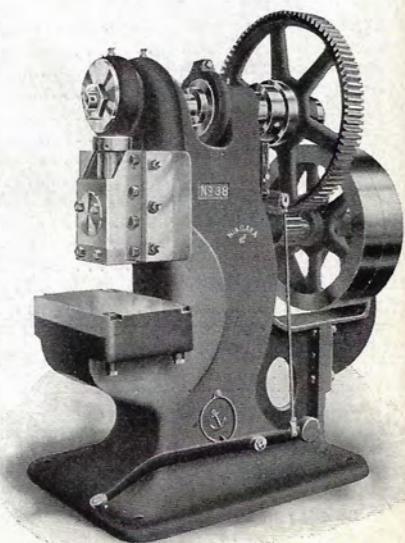
No. 35, Plain



No. 36, Geared



No. 37, Geared



No. 38, Geared

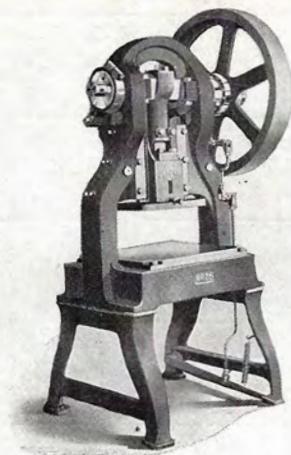
## Niagara Power Punching Presses

Number . . . . .	34	35	36	37	38	39	43	44	44A	45	46	47
Code word . . . . .	Salmon	Saloma	Salpica	Salsole	Saltasen	Salubre	Sanative	Sancroft	Sandstone	Sanefa	Sangant	Sanicula
Opening in bed . . . . .	6 x 7	6 x 8	8 x 10	10 x 12	12 x 14	14 x 16	5 x 8	6 x 8	6 x 8	6 x 8	12 x 14	14 x 16
From center of slide to back . . . . .	5	6	7	8 1/2	10	12	12	20	25	18	20	22
Bed to slide, when up, standard, stroke . . . . .	8 1/2	9	9 1/2	10	11	11	8	8 1/2	9	9	10	10
Stroke of slide, standard . . . . .	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Stroke of slide, maximum . . . . .	2	2 1/2	3 1/2	3 3/4	4	5	2	2	2 1/2	2 1/2	3 1/2	3 3/4
Adjustment of slide . . . . .	3	3	3	3	3	3	2	3	3	3	3	3
Usual hole in slide, square . . . . .	2	2	2	3	3	3	2	2	2	2	2	3
Area top of bolster-plate . . . . .	9 x 14	9 x 16	13 x 19	15 x 22 1/2	18 x 27 1/2	22 x 33	9 1/2 x 13	10 x 13 1/2	11 x 15 3/4	11 x 15 3/4	17 1/2 x 23	21 x 24 1/2
Thickness of bolster-plate . . . . .	1 1/2	2	2 1/2	3	3 1/2	4	1 1/2	1 1/2	2	2	2 1/2	3
Diameter of shaft in bearings . . . . .	2 1/2	3	3 1/2	4 1/4	5	5 3/4	2 1/4	2 1/2	2 1/2	3	3 1/2	4 1/4
Floor space, F to B—R to L . . . . .	32 x 28	37 x 34	42 x 40	53 x 45	64 x 50	75 x 60	40 x 22	52 x 28	61 x 28	55 x 34	67 x 40	76 x 45
Height to center of shaft . . . . .	56	61	65	67	70	73	55 1/2	56	60	61	67	67
Size of fly wheel . . . . .	28 x 4	34 x 5	40 x 6	45 x 7	50 x 8	60 x 9	22 x 3	28 x 4	34 x 5	40 x 6	45 x 7	45 x 7
Weight of fly wheel . . . . .	280	500	750	1100	1500	1900	175	280	500	750	1100	850
Speed of fly wheel . . . . .	110	100	90	85	80	70	120	110	110	100	90	85
Weight . . . . .	1400	2200	3300	5400	7500	12000	1500	2200	3500	3200	5400	7300
<b>Geared Press—Code word.</b>	Salvaron	Salzgraaf	Sambuco	Samente	Samicas	Santuria	Sanscrit	Santuria	Sapador	Saperdas	Saphonis	Saphonis
Size of fly wheel . . . . .	18 x 2 1/2	20 x 3	25 x 4	30 x 5	35 x 6	40 x 7	18 x 2 1/2	18 x 2 1/2	20 x 3	25 x 4	30 x 5	30 x 5
Weight of fly wheel . . . . .	130	175	275	500	750	1100	130	175	130	275	500	500
Speed of fly wheel . . . . rev.	390	390	360	300	280	210	390	390	390	360	300	300
Size of pulley . . . . .	20 x 3	25 x 4	30 x 5	35 x 6	40 x 7	40 x 7	18 x 2 1/2	18 x 2 1/2	20 x 3	25 x 4	30 x 5	30 x 5
Ratio of gearing . . . . .	6:1	6:1	6:1	6:1	7:1	7:1	6:1	6:1	6:1	6:1	6:1	6:1
Strokes per minute . . . . .	65	65	60	50	40	30	65	65	65	60	50	50
Floor space, F to B—R to L . . . . .	36 x 23	44 x 25	57 x 31	63 x 37	82 x 43	92 x 53	59 x 25	65 x 25	61 x 25	74 x 32	86 x 38	7300
Weight . . . . . lbs.	1400	2200	3400	5600	8000	13000	2200	3500	3200	5400	5400	5400

Bolster-plate with bolts and wrenches are included in the price. Stroke varying from standard and other modifications are charged for extra.

# Niagara Power Arch Presses

## Series No. 20



Presses of this type are adapted to a variety of sheet metal work, their distinguishing features being the long distance between uprights and the large opening in bed.

**FLAT BOLSTER** is used for blanking, forming, stamping and lettering operations.

**HORN AND FORCE** or Side Seaming Attachments can be furnished for round, square and oval work, etc. The horn is fastened to a horn bolster.

**SUNKEN BOLSTER WITH WIRING FRAME** can be attached for operating wiring dies for pieced tinware, etc.

**WIRING FRAME.** When large and deep work requires to be wired, a wiring frame is fitted to the Press, and the dies made to slide in it.

**REMOVABLE FRONT.** The bed is made with a removable front piece only when so ordered, otherwise solid. The open front is necessary when wiring dies, or horn and force are to be used.

### PLAIN PRESS

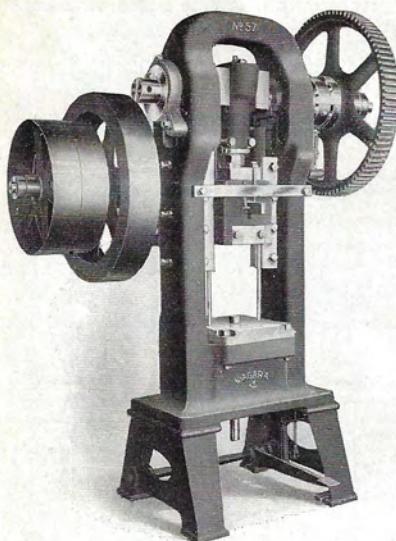
	No. 25	No. 26	No. 27
Code word . . . . .	Satchel	Satellite	Satiable
Opening in bed . . . . .	16 x 22	16 x 22	16 x 22
Distance between uprights . . . . .	28 1/4	30 1/2	30 1/2
From bed to slide, when up, standard stroke . . . . .	10	12	12
Stroke of slide, standard . . . . .	2 1/2	3	3
Stroke of slide, maximum . . . . .	4 1/2	5	6
Adjustment of slide . . . . .	3	3	3
Usual hole in slide, square . . . . .	2	2	3
Area top of bolster-plate . . . . .	26 x 28	26 x 29 1/2	26 x 30
Thickness of bolster-plate . . . . .	1 1/2	1 1/2	2
Diameter of shaft, in bearings . . . . .	3	3 1/2	4 1/4
Floor space, F to B—R to L . . . . .	41 x 46	42 x 51	44 x 56
Height to center of shaft . . . . .	67	72	78
Size of fly wheel . . . . .	34 x 5	40 x 6	45 x 7
Weight of fly wheel . . . . .	500	750	1100
Speed of fly wheel . . . . .	rev.	100	90
Weight . . . . .	lbs.	3200	4300
			6100

### GEARED PRESS

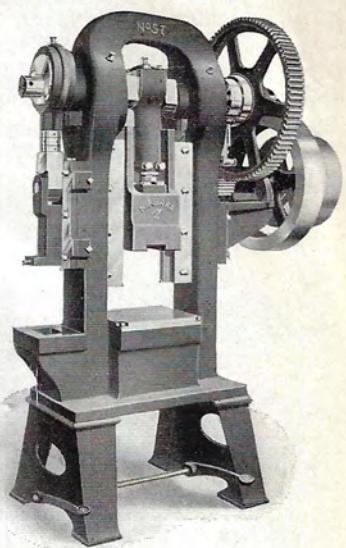
	No. 25	No. 26	No. 27
Code word . . . . .	Satiros	Satisfied	Satollo
Size of fly wheel . . . . .	28 x 4	30 x 5	40 x 6
Weight of fly wheel . . . . .	lbs.	500	750
Speed of pulleys . . . . .	rev.	270	250
Size of pulleys . . . . .	inches	20 x 3 1/2	24 x 4
Ratio of gearing . . . . .		6:1	6:1
Floor space, F to B—R to L . . . . .	inches	44 x 64	45 x 69
Weight . . . . .	lbs.	3500	4700
			6900

## Niagara Straight Sided Power Presses

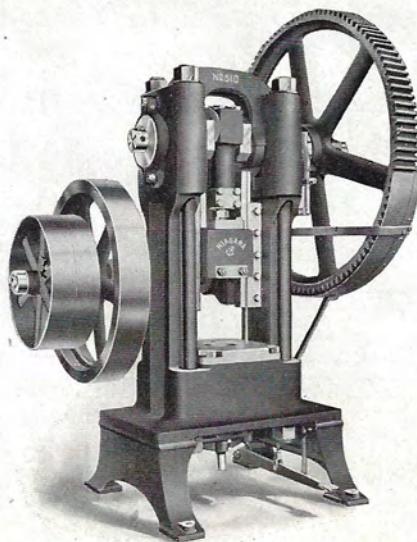
Series No. 50.



No. 57, Geared, with Top and Bottom Knock Out.



No. 57, Geared, with Outer Slide.



No. 510, Geared, with Bottom Lift Out.

# Niagara Straight Sided Power Presses

## Series No. 50

Designed for work requiring accuracy and strength, and particularly adapted to trimming drop forgings, embossing work, automobile and bicycle parts, and heavy sheet metal work.

The frame is very rigid, and the strain upon it is borne directly by the uprights.

CLUTCH of excellent construction controls the motion.

FLY WHEEL on plain Presses has a long bronze-bushed bearing, and means are provided for continuous lubrication.

SHAFT is heavy, forged of steel, with large crank pin. The clutch collar is forged solid on the shaft.

SLIDE has long "V" gibbed bearings. It is supported in the guides nearly the entire length when the Press is in operation. Various means can be provided for fastening punches, viz., the usual recess with clamp, or a dovetail, or a flange to which the punch is fastened by means of screws.

SIDE PUNCHING AND SHEARING ATTACHMENTS can be applied to these presses.

PLAIN PRESS	No.	54	55½	56	57	58	510R	512
Code word.....		Saudavel	Saudos	Sauerbad	Saumross	Sauntered		
Opening in bed.....inches	4 x 4	6 x 6	8 x 8	10 x 10	12 x 12	14 x 14	17 x 17	
Distance between up- rights.....inches	10	12	14	18	22	25 below gibbs	28	
From bed to slide, when up, standard stroke.....inches	8½	10	12	13	16	16	18	
Stroke of slide, stand- ard.....inches	2	2½	3	3	3	3	4	
Stroke of slide, maxi- mum.....inches	4	4½	6	8	8	8	9	
Adjustment of slide.....inches	2	3	3	3	3	4	4	
Usual hole in slide, square.....inches	2	2	2	3	3	3	3	
Area top of bolster- plate.....inches	9½ x 11	12 x 12	14 x 12	18 x 16	20 x 21	21 x 21	27 x 27	
Thickness of bolster- plate.....inches	1¾	2	2	2½	3	3	4	
Diameter of shaft, in bearings.....inches	2½	3	3½	4¼	5	6½	7¼	
Floor space, F to B—R to L.....inches	28 x 32	40 x 42	40 x 45	45 x 54	52 x 65			
Height to center of shaft.....inches	55	67	71	76	82	90	100	
Size of fly wheel.....inches	28 x 4	34 x 5½	40 x 6	45 x 7	50 x 8			
Weight of fly wheel... lbs.	280	600	750	1100	1500			
Speed of fly wheel ... rev.	110	100	90	85	80			
Weight .....	1350	2800	3500	5000	8000			

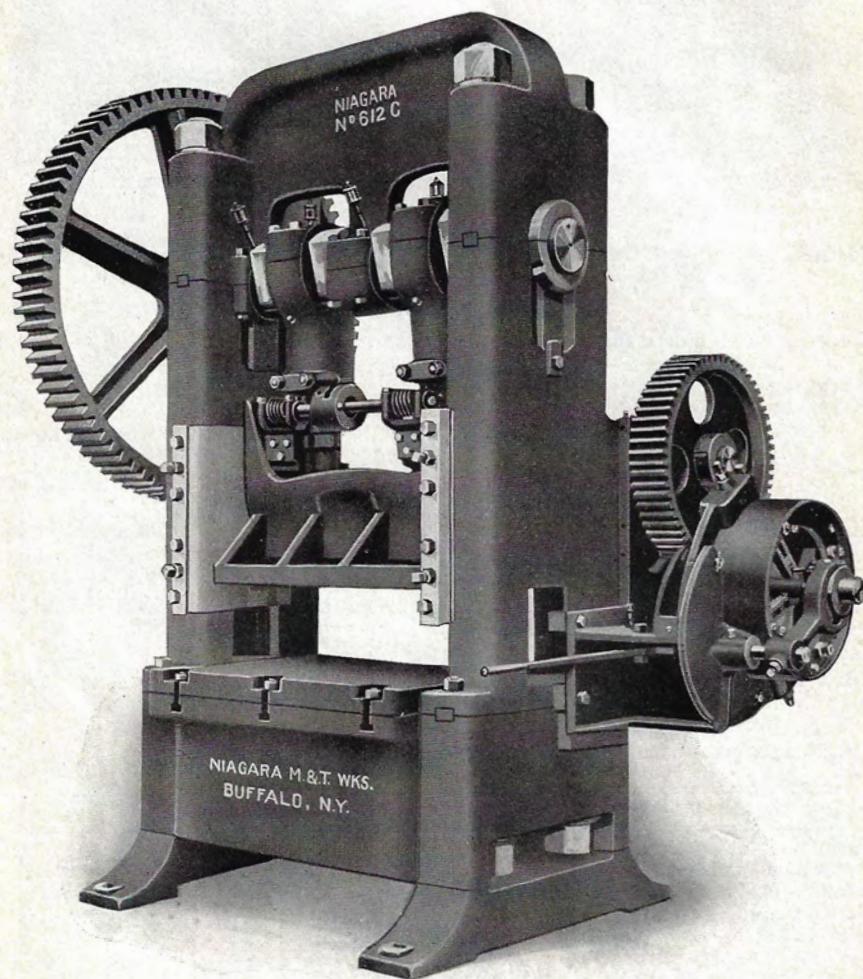
GEARED PRESS	No.	54	55½	56	57	58	510R	512
Code word .....		Sauropis	Saurat	Sautelle	Sauvions	Savarin	Savorso	Savensis
Size of fly wheel.....inches	22 x 3	28 x 5	30 x 5	40 x 6	45 x 7	50 x 8	60 x 9	
Weight of fly wheel .... lbs.	175	375	500	750	1100	1500	1900	
Speed of pulleys.....rev.	300	270	270	270	260	250	250	
Size of pulleys .....	18 x 2½	20 x 3½	24 x 4	26 x 5	28 x 6	34 x 7	38 x 7	
Ratio of gearing .....	6:1	6:1	6:1	6:1	7½:1	8½:1	9½:1	
Floor space, F to B— R to L.....inches	30 x 48	44 x 58	46 x 63	51 x 73	63 x 82	75 x 92	90 x 118	
Weight .....	1500	3100	3900	5800	9200	15000	24000	

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

## Niagara Double Crank Presses

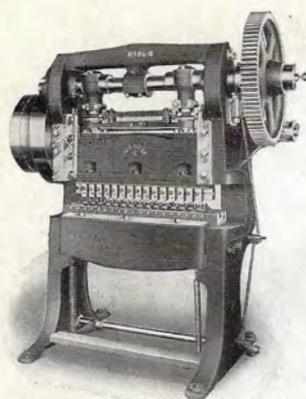
Series No. 60



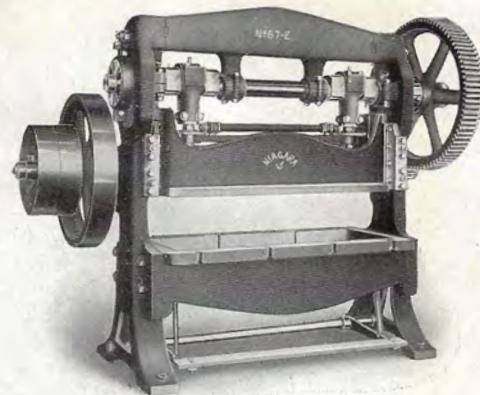
No. 612C, Double Back Geared, with Friction Clutch

## Niagara Double Crank Presses

Series No. 60



No. 66B, Geared, with Gap and  
Punching Die



No. 67E, Geared, Straight Uprights

These Presses are used for operating long dies for blanking, punching and forming operations.

Uprights are ordinarily made straight, this being the most rigid construction. They can be furnished with a gap or open throat, when it is desired to use a Press for work longer than the machine, such as gang punching, or when the finished work is to be removed endways from the dies.

ADJUSTMENT OF SLIDE is made by bevel gears attached to the adjusting screw of the connections. Perfect alignment is always maintained.

CLUTCH of sliding key type is regularly used, or automatic jaw clutch can be applied, which is preferable on heavy geared Presses.

SHAFT is heavy, forged of steel, with large crank pins.

FLY WHEEL on plain Presses has a long bronze-bushed bearing, and means are provided for continuous lubrication.

GEARS are machine cut, and the large gear is bronze bushed.

CONNECTION has a heavy screw of tool steel, ball shaped at one end, and resting in a recess of the slide. The connection screw is locked to the pitman in the desired position by means of two clamping bolts.

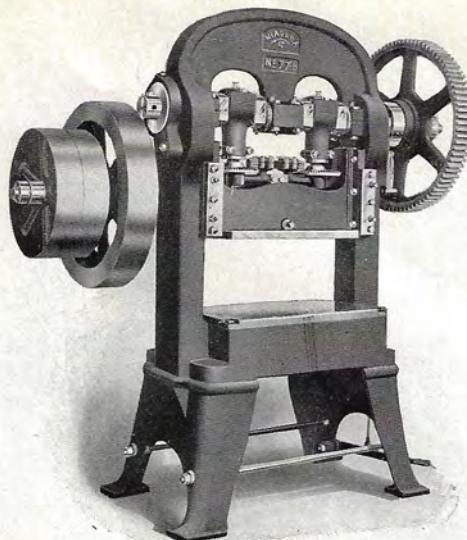
Length between housings can be made to suit the requirements.

PLAIN PRESS	No. 65	No. 66	No. 67	No. 69	No. 612	No. 615
From bed to slide, when up, standard stroke.....inches	12	12	12	12	14	20
Stroke of slide, standard.....inches	2	2	2	2	3	5
Stroke of slide, maximum.....inches	4	4	4	4	6	12
Adjustment of slide.....inches	3	3	3	3	4	4
Diameter of shaft, in bearings.....inches	3	3½	4¼	5¾	7¼	8
Height to center of shaft.....inches	66	70	73	82	90	100
Size of fly wheel.....inches	34 x 5	40 x 6	45 x 7	60 x 9		
Weight of fly wheel.....lbs.	500	750	1100	1900		
Speed of fly wheel.....rev.	100	90	85	70		

GEARED PRESS	No. 65	No. 66	No. 67	No. 69	No. 612	No. 615
Size of fly wheel.....inches	28 x 4	30 x 5	40 x 6	50 x 7	60 x 9	50 x 7½
Weight of fly wheel.....lbs.	280	500	750	1300	1900	1400
Speed of pulleys.....rev.	270	270	250	240	250	300
Size of pulleys.....inches	20 x 3½	24 x 4	26 x 5	32 x 7	38 x 7	38 x 7
Ratio of gearing.....	6:1	6:1	6:1	7½:1	9½:1	30:1

# Niagara Double Crank Presses

Series No. 70



No. 77B, Geared

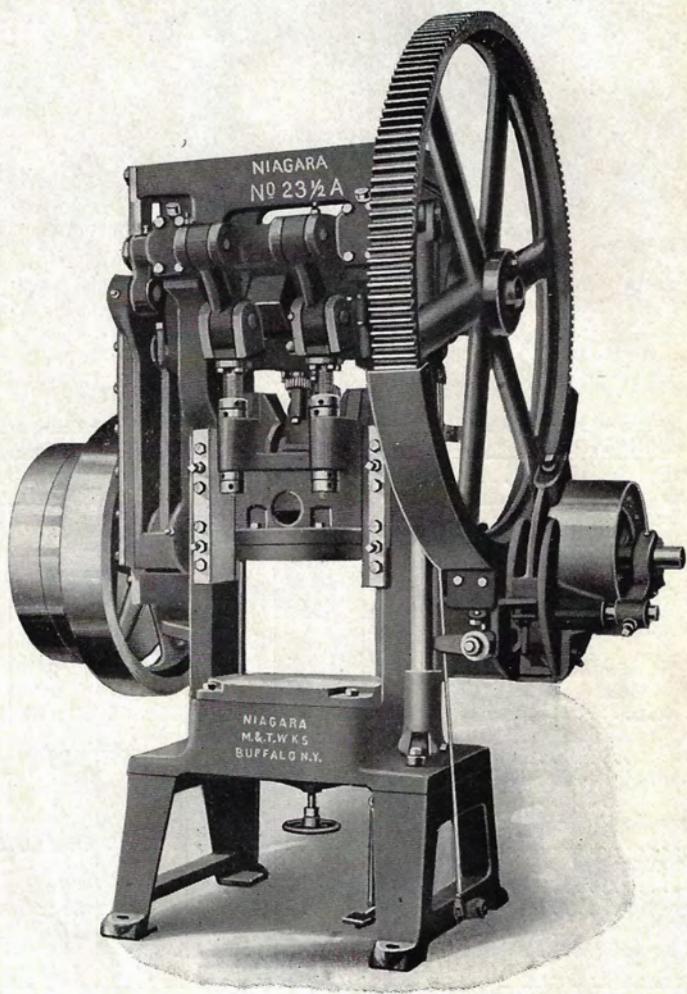
PLAIN PRESS	No. 76B	No. 77B	No. 77C	No. 78B	No. 78C	No. 79B	No. 79C
Code word .....	Selenium	Selfishly	Seltsam	Semaphore	Semblante	Semenista	Semiferos
Opening in bed .....	14 x 27	16 x 28	16 x 38	20 x 30	20 x 42	20 x 30	20 x 38
Distance between uprights .....	inches	33	36	44	36	48	36
From bed to slide, when up, standard stroke .	inches	12	12	12	13	13	13
Stroke of slide, standard.	inches	2	2½	2½	3	3	3
Stroke of slide, maxi- mum .....	inches	5	6	6	6	6	6
Adjustment of slide ..	inches	3	3	3	3	3	3
Area top of bolster- plate .....	inches	21 x 32	24 x 35	24 x 43	28 x 35	28 x 47	30 x 35
Thickness of bolster- plate .....	inches	2	2	2	2½	2½	2¾
Diameter of shaft, in bearings .....	inches	3½	4¼	4¼	5	5	5¾
Floor space, F to B—R to L .....	inches	40 x 68	45 x 72	45 x 80	50 x 78	50 x 90	60 x 77
Height to center of shaft .....	inches	69	73	73	76	76	82
Size of fly wheel .....	inches	40 x 6	45 x 7	45 x 7	50 x 8	50 x 8	60 x 9
Weight of fly wheel ..	lbs.	750	1100	1100	1500	1500	1900
Speed of fly wheel.....	rev.	90	85	85	80	80	70
Weight .....	lbs.	5700	7700	8700	10200	12000	13500

GEARED PRESS	No. 76B	No. 77B	No. 77C	No. 78B	No. 78C	No. 79B	No. 79C
Code word .....	Semolina	Senalero	Senderaba	Senfkorn	Sennhirt	Senorona	Sensemant
Size of fly wheel .....	inches	30 x 5	40 x 6	40 x 6	45 x 7	45 x 7	50 x 7
Weight of fly wheel ..	lbs.	500	750	750	1100	1100	1300
Speed of pulleys .....	rev.	270	250	250	260	260	240
Size of pulleys .....	inches	24 x 4	26 x 5	26 x 5	28 x 6	28 x 6	32 x 7
Ratio of gearing .....		6:1	6:1	6:1	7½:1	7½:1	7½:1
Floor space, F to B—R to L .....	inches	45 x 87	54 x 92	54 x 100	75 x 100	75 x 112	72 x 103
Weight .....	lbs.	6200	8600	9700	11600	13500	15500

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

## Niagara Toggle Draw Presses



No. 23 1/2 A

## Niagara Toggle Draw Presses

This type of Double Action Presses is particularly recommended for large and heavy work. The toggle mechanism is practically at rest while the draw punch performs its work. This construction puts all the strain exerted by holding the blank directly upon the frame, not upon the main shaft as in Cam Presses; consequently better and smoother work can be produced with less power. The straight column frame is very rigid, and the strain upon it is taken up direct by the uprights.

**CLUTCH.** The motion of this Press is ordinarily controlled by a friction clutch operated by means of a hand lever. The operator can start and stop the machine instantly at any point of the up and down stroke.

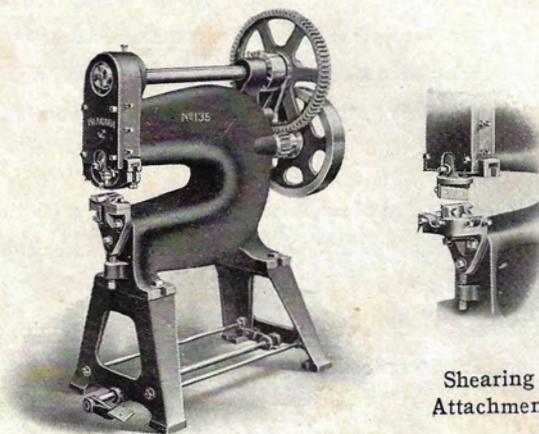
If desired, the smaller sizes of Toggle Presses can be equipped with an Automatic Friction Clutch controlled by foot treadle.

GEARS are machine cut.

Number .....	23½A	23½B	24A	24B	25A	25B
Code word .....	Sep- tarium	Sera- fina	Sere- nado	Serf- dom	Sepi- cole	Sepolto
Opening in bed, rectangular part.inches		17 x 14				
Opening in bed, circular part ..inches	14	14	3	3	4	4
Distance between uprights .....inches	26	26	30	30	34	34
From bed to blankholder, stroke down, adj. up .....inches	17	21	20	26	22	30½
From bed to plunger, stroke down, adj. up .....inches	19	22	22	28	24	33
Stroke of slide, blankholder .....inches	8½	8½	10	13	12½	13½
Stroke of slide, plunger .....inches	13	13	18	21	18	22
Adjustment of both slides.....inches	4	4	6	6	8½	8½
Diameter of shaft, in bearings ..inches	4½	4½	6½	6½	8	8
Size of fly wheel .....inches	45 x 7	45 x 7	60 x 7	60 x 7	45 x 7	45 x 7
Weight of fly wheel ..... lbs.	1100	1100	1600	1600	1100	1100
Speed of pulleys ..... rev.	200	300-400	150-180	200-330	280	280
Size of pulleys .....inches	28 x 6	28 x 6	38 x 8	38 x 8	30 x 8	30 x 8
Ratio of gearing .....	10:1	22:1	10:1	22:1	30:1	40:1
Weight ..... lbs.	16000	20500	27000	33000	41000	47000
Maximum depth capacity .....inches	6	6	8½	10	8½	10
Largest blank that can be cut or drawn .....inches	20	20 x 26	25	25	30	30
Largest article that can be cut or drawn .....inches	14	10 x 15½	16	16	24	24

# Niagara Power Punches

Series No. 130



Shearing  
Attachment

These machines are arranged for punching small round holes, and they can also be used for punching small holes of irregular shape. The motion is controlled by a positive clutch actuated by a foot treadle.

**CUTTING ATTACHMENT.** We can furnish, at extra charge, a cutting attachment for use in place of the punches and dies. The knives, which are 4 inches long, can be set either parallel or at right angle to the front of the Press, and their position can be changed quickly.

**CAPACITY.** Will punch  $\frac{3}{8}$  inch hole through  $\frac{3}{8}$  inch iron, or equivalent. Will cut  $\frac{3}{16}$  inch iron and lighter. The price of Punching Machine includes die and punches for holes  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$  inch diameter.

		No. 135	No. 136
Depth of throat .....	inches	18	24
Stroke .....	inches	$\frac{3}{4}$	$\frac{3}{4}$
Distance from top of die to slide, when up .....	inches	$2\frac{3}{4}$	$2\frac{3}{4}$
Size of fly wheel .....	inches	18 x 3	18 x 3
Proportion of gearing .....		$4\frac{1}{2}:1$	$4\frac{1}{2}:1$
Speed per minute .....	rev.	300	300
Height to top of bed .....	inches	29	31
Height to center of shaft .....	inches	45	47
Floor space, F to B—R to L .....	inches	43 x 22	53 x 22
Weight .....	lbs.	1200	1700
Code word, punching only .....		Setania	Setima
Code word, shearing only .....		Settling	Seviral



